

CASE NO. 01-3072

UNITED STATES COURT OF APPEALS
FOR THE SIXTH CIRCUIT

SYD H. LEVINE

Petitioner

v.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Respondent

PETITION FOR REVIEW OF AN ORDER OF THE
ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL APPEALS BOARD

REPLY BRIEF FOR PETITIONER

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August 13, 2001 (Proof Filing)
September 7, 2001 (Final Filing)

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GLOSSARY

| | |
|----------------------------|---|
| Annulus (Annular Space) | The space between two strings of tubulars, as in the space between tubing and casing |
| Annulus Gel | Water based bentonite clay gel used as an annular fluid |
| AOC | Administrative Order on Consent |
| AOR | Area of Review |
| Apx. | Joint Appendix |
| Aquifer | Geological formation capable of yielding a significant amount of water to a well or spring (40 C.F.R. §§144.3 AND 146.3) |
| A.R. | Administrative Record |
| Brine | Salt Water |
| Casing | Steel pipe, often 4-1/2 or 5-1/2 inch outside diameter, usually cemented into the drilled wellbore |
| Class IIR | Enhanced oil recovery injection well |
| EAB | U.S. EPA Environmental Appeals Board |
| DOJ | Department of Justice |
| EPA | United States Environmental Protection Agency |
| EPA Region IV | EPA Regional Office in Atlanta Georgia (covering Kentucky) |
| FOIA | Freedom of Information Act |
| gpm | gallons per minute |

| | |
|------------|--|
| MAP | Monitoring of Annulus Pressure MIT (described at 40 C.F.R. §146.8(b)(1)) |
| MIT | Mechanical Integrity Test (see 40 C.F.R. §146.8) |
| Packer | Downhole sealing device |
| psi (psig) | pounds per square inch (gauge) |
| PWS | Public Water System |
| Reg-Fix | 1993 Technical changes to the UIC regulations |
| SAPT | Standard Annular Pressure Test (the MIT described at 40 C.F.R. §146.8(b)(2)) |
| SDWA | Safe Drinking Water Act |
| Tubing | Small diameter pipe sometimes run into casing and set near the top of the injection interval. |
| UIC | Underground Injection Control |
| USDW | Underground Source of Drinking Water |

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REPLY BRIEF FOR PETITIONER

INTRODUCTION

Petitioner respectfully offers the following in reply to the Brief For Respondent. Petitioner wishes to withdraw that portion of his Petition for Review pertaining to “Issue III”, termed “EPA Lacks Statutory Authority to Regulate Underground Injection Where No USDW Exists” in the argument

section of Petitioner's initial Brief herein. While Petitioner continues to sincerely believe Issue III is important and that he should have standing with respect to said issue, the issue will soon be before this Court in another appeal where standing cannot be questioned, and where the 'No-USDW' issue will hopefully be more competently presented to the Court.

Respondent alleges that granting the petition herein would seriously undermine the "statutorily-mandated effort" of EPA, but nothing could be further from the truth. It is EPA that seeks to distort the UIC regulations to an extreme that has nearly caused the extinction of oil production in Hancock and Ohio Counties, Kentucky. Region IV EPA has tortured the plain language of the UIC regulations to reverse its past policy on annulus gel, and to require a closed annulus for the existing Class IIR injection wells at issue.

Finally, Petitioner should be found to have standing to pursue his remaining claims.

REPLY STATEMENT OF FACTS

Petitioner and Respondent differ seriously on factual issues only with respect to technical requirements and how Region IV EPA has dealt with said technical requirements. Accordingly, the following counterstatement of facts is limited to technical matters and is not organized with the same numbering scheme as the Brief for Respondent.

1. Annuli and Annulus/Annular Fluid

There is no regulatory mandate that existing Class IIR wells, such as the wells at issue herein, even have an annulus. Class IIR casing injectors without tubing and packer are specifically allowed under the UIC regulations. The annulus space in “standard” Class IIR enhanced oil recovery injection wells is fluid filled principally to facilitate the use of the mechanical integrity test (MIT) contemplated at 40 C.F.R. §146.8(b)(2). And the fluid can be a **gas** or a liquid.¹

There is no list of approved annulus fluids in the UIC regulations for Class IIR injection wells, only the general statement that the fluid can be a liquid or gas. *Id.* While Region IV EPA asserts that fresh water is an approved annulus fluid, it appears on no list or guidance any more than annulus gel does (there is no such list or guidance document). Respondent’s Br. at 17. In fact, fresh water is not listed as an annulus fluid in the UIC permits at issue herein, only “brine” is specifically listed. (A.R. 94 at Part I, Page 3, Apx. 98; A.R. 95 at Part I, Page 3, Apx. 119.) Further, “annular additive” is something added to annular fluid, not the annular fluid itself.² Respondent’s Br. at 8.

¹ Though not a commonly understood concept, the term “fluid” encompasses gases, liquids, and gels. See the definition of “fluid” at 40 C.F.R. §§144.3 and 146.3.

² This is neither standard industry usage, nor even standard EPA usage. An “additive” is added to the annular or annulus fluid. Hence the “annular additive”

2. Annulus Gel

It was not until 1998 that the National UIC Technical Workgroup produced its Final Work Product #5 – “Use of Annulus Additives to Address Leaks in Deep Injection Wells”. (A.R. 96, Apx. 219-222.) It should be noted that said report does not rise to even the status of a guidance document. Further, annulus gel was approved for use in Region IV EPA nearly a decade before the creation of the UIC Technical Workgroup report. And finally, the report addresses deep injection wells, but the wells at issue are some of the shallowest Class IIR injection wells in existence.³

Annulus gel is indeed a bentonite clay product. It has been used as an annulus fluid in Kentucky for many years, and with Region IV EPA approval at least since 1990. Bentonite clay uses include everything from “drilling mud” to kitty litter to cosmetic ingredients. Drilling mud is very finely ground bentonite, and it is this material that is mixed with fresh water or brine to form annulus gel. The volume of bentonite used to mix annulus gel is almost certainly exceeded by the volume used in female mud wrestling (an activity your Petitioner has never personally witnessed). The bentonite miners and processors will not

bentonite is mixed with water to form the annulus gel fluid. There are many types of annular additives, but they are not synonymous with annular fluid.

³ Only one well exceeds 300 feet in depth. (A.R. 94 at 2, Apx. 97.)

“stand behind” this material for use as annulus gel (or in mud wrestling), because there is no economic incentive for them to do so.

The chemistry of annulus gel is complex. It does increase the viscosity of the water in the annulus, but its repair of very small leaks is accomplished by the formation of “filter cake”.⁴ Said effect is quite long lived, and many wells with annulus gel in Kentucky have undergone two (2) five year MIT cycles, with two or more MITs performed and passed.

Annulus gel is not a corrosion inhibition additive. But corrosion inhibitors are **not** required under the UIC regulations for Class IIR injection wells, nor do the specific UIC permits at issue herein require corrosion inhibitor additives. The UIC permits at issue mention only brine (salt water) as an annulus fluid, a very corrosive material indeed. If annulus gel is made with fresh water (the standard industry practice), then it would be inherently less corrosive than plain brine as called for in the subject UIC permits. That annulus gel is or is not a corrosion inhibitor is irrelevant.

3. Monitoring of Annulus Pressure

⁴ The UIC regulations do not prohibit all leaks, but rather a “significant leak”. 40 C.F.R. §146.8(a)(1). While EPA has resisted clarifying the meaning of “significant leak”, it is clearly something more than no leak at all. “Neat” annulus gel, that is annulus gel without the addition of “lost circulation” particulate matter, will not seal leaks that rise to any reasonable definition of “significant leak”.

Monitoring the annulus pressure is not a standard industry method used to detect a loss of mechanical integrity in Kentucky

4. USDWs

As stated above, Petitioner no longer seeks a ruling on the “No -USDW” issue. However, some material is presented here on USDWs because the lack of USDWs may still impact the remaining two issues (Annulus Gel and Open vs. Closed Annulus).

Region IV EPA has known no USDWs exist under the oil and gas leases at issue herein for many years. In 1995, Thomas J. Hansen, then chief of the UIC Section at Region IV declared, “Ground water data currently available to the UIC Section indicates that there are no aquifers in this area capable of supplying a PWS.” (A.R. 113.) But long before that, a paucity of groundwater formed the basis for regulatory relief in Hancock and Ohio Counties, Kentucky. Notably, the area at issue is subject to a special rule allowing a mere fifty (50) feet of primary cement in injection wells (all other areas are required to have 100 feet or more). (A.R. ?, Apx. 332⁵.)

Respondent alleges that EPA has now determined that a flow of one gallon per minute is sufficient aquifer yield to qualify as a USDW.

⁵ This document appears to be missing from the Administrative Record, but was furnished to the EAB.

Respondent's Br. at 9, 48. But Region IV is the only EPA Region to create a document on yield criteria to define an aquifer as a USDW, and it is not one gallon per minute.⁶ (A.R. 105.) That May 21, 1985 document sets "about 5-10 gpm and could be as low as 2 gpm" as the aquifer yield criteria to definitionally qualify as a USDW. (*Id.* at 1.) The newly embraced one gallon per minute flow rate criteria was borrowed from an obscure internal EPA document dated June 4, 1993, concerning radioactive waste. (A.R. 63.) However, on May 7, 1998, EPA headquarters responded to a letter from your Petitioner saying that nothing in the June 4, 1993 document "attempts to override established policy guidance set by the regions" on aquifer yield qualifying as a USDW. (A.R. 104.) The one gallon per minute yield criteria was disingenuously cited by Region IV EPA only because no aquifer yielding even two gallons per minute could be found by EPA in the Easton, Hancock County, Kentucky area. Keeping aquifer yield in perspective, no PWS could or would rely on a well or spring yielding even five gallons per minute, and in many jurisdictions such a practice is prohibited by law. Further, any groundwater professional advising a PWS to rely on a one, two, or even five gallon per minute yielding spring or well would be guilty of actionable malpractice.

⁶ There was a predecessor Region IV document also addressing aquifer yield dated February 29, 1984, and setting the yield criteria at 1.7 – 2.6 gallons per minute.

In August of 1997, George Ford conducted several aquifer tests in the Easton Consolidated Field, but could locate only one spring that would yield even one gallon per minute. It should be noted that the Clifton Banks spring is located outside the one-quarter mile area of review (AOR) for the injection wells at issue herein (“only one to two miles” in Respondent’s Brief at page 49). The wells Mr. Ford tested that were within the AOR of the subject injection wells yielded much less than one gallon per minute.⁷ The August, 1997 George Ford Clifton Banks spring test is controversial for other reasons, giving rise to allegations of perjury against Mr. Ford.⁸ A statistical analysis of Mr. Ford’s test results and conclusions is troubling, and is discussed at some length in a letter dated March 2, 1998. (A.R. 110 at 2-5.)

Respondent identifies the Caseyville-Tradewater Formation as the aquifer that qualifies as a USDW. Respondent’s Br. at 10, 49. Petitioner concedes that the Caseyville-Tradewater Formation does sporadically yield water to wells or springs in the area in question, but could never serve a PWS and could never rise

⁷ Mr. Ford uses unconventional terminology in his letter to Department of Justice attorney Bob Kaplan, discussing actual flow and apparent flow. He euphemistically refers to tests of the wells yielding less than 0.5 gallon per minute as “inconclusive tests”. (A.R. 72, Apx. 194.) It should be noted that this undated Ford letter to Mr. Kaplan was unobtainable by your Petitioner even after a formal appeal under the FOIA, but was surprisingly produced by Respondent as evidence before the EAB in this action.

⁸ A DOJ investigator contacted your Petitioner in 1998, though the disposition of the matter is unknown to Petitioner.

to the definition of a USDW. It is simply a fact that there are no ‘blanket’ sandstones of sufficient areal extent to be aquifers that rise to the definition of a USDW in the area at issue herein. (A.R. 111.)

Respondent goes on to badly mischaracterize the testimony of two eminently qualified expert witnesses. Contrary to what Respondent alleges, Avery E. Smith did not conclude that there are no aquifers in the area. Respondent’s Br. at 50. Smith simply concluded there is a scarcity of aquifers and a lack of lateral continuity. (A.R. 111.) Further, both experts did far more than ‘looking only at data, studies, and maps’. Respondent’s Br. at 50. Both experts visited the Clifton Banks spring, and Avery E. Smith previously worked for the U.S. Geological Survey mapping the very area at issue herein, and is arguably the living expert on the geology of the area.

Petitioner is accused of ‘misconstruction of one sentence’ in a United States’ brief in another action as the basis for his assertion that EPA has declared no USDWs exist in the area in question. *Id.* at 52. But there are three separate places, not one, in the United States’ Memorandum on Penalties and Injunctive Relief in United States v. Syd H. Levine & Associates, et al., C.A. No. 4:97CV-169-M, where EPA addresses the existence of USDWs. (*See* Petitioner’s Br. at 13 for a reproduction of all three passages on one page.)

The quote from page 22 clearly shows EPA in agreement with Petitioner's experts, contrary to the statement in Respondent's Brief at page 50. Respondent may now regret its No-USDW declaration, but it was nevertheless made, and it was based on sound scientific evidence. Respondent enunciates for the first time an explanation for the alleged misconception – that Petitioner's experts allowed EPA to conclude that there is only one USDW in the area. Respondent's Br. at 54. Not only is this explanation bizarre on its face given the text referenced above, but the author is apparently unaware that EPA declared there is at most only one USDW in said area **over a decade ago**. A declaration that there is at most one USDW is the foundation for the Annie Godfrey 50 foot cement rule.⁹ (A.R. ?, Apx. 332; A.R. ?, Apx. 333.)

Respondent suggests that the yield of area aquifers tends toward the minimum that would be considered a USDW. Respondent's Br. at 55. Your Petitioner relies on a domestic water well in the subject area, one of only a very few still in use today due to low yields. Petitioner's well is arguably the very

⁹ Injection wells in Kentucky are ordinarily required to be cemented "top to bottom". In the area in question, limited to portions of Hancock and Ohio Counties, Kentucky, Region IV EPA accepts 50 feet of cement as adequate. The rationale, first argued to Region IV EPA by your Petitioner, is that at most there can be only one USDW in said area, and there is thus no danger of fluid communication between USDWs. Region IV EPA accepted this argument and was able to approve what is now widely referred to as the "Annie Godfrey 50 foot cement rule".

best well in the area, yet it went completely dry during the late summer of 2000, as it has done in years past. The idea that area aquifers could serve a PWS under any circumstances is the height of absurdity. If there is an aquifer anywhere that does not qualify as a USDW, then it must be in the area at issue herein. For EPA to suggest that an area aquifer can qualify as a USDW is tantamount to saying all aquifers capable of producing any amount of potable water are USDWs. Yet the UIC regulations clearly contemplate that there are “Aquifers which do not fit the definition of “underground sources of drinking water They are simply not subject to the special protection afforded USDWs.” 40 C.F.R. §144.1(g).

Finally, Respondent repeatedly seeks to mislead the Court on the USDW issue. Stated plainly, there are aquifers that yield drinking water sufficient to serve a single household, but that could never qualify as a USDW.

STANDING REVISITED

This section addresses item ‘I’ under “Argument” beginning at page 22 of Respondent’s Brief.

A. Petitioner Has Suffered Injury In Fact

Petitioner seeks relief herein for entirely selfish reasons, not on behalf of Jett Black, Inc. or anyone else.¹⁰

1. Petitioner Has Article III Standing Due to Endangerment of His Domestic Water Well

Respondent loudly objects to Petitioner's position that he has standing because his domestic water well is very close to the subject injection wells. The underlying proposition seems to be that anyone who has so vociferously opposed unnecessary regulation is somehow barred from having legitimate concerns about his domestic drinking water supply. Respondent suggests once again that because Petitioner holds that no USDW exists under the area at issue herein, he is somehow barred from expressing concern about possible damage to his water well. Respondent's Br. at 25. There is nothing disingenuous, improper, or suspect about Petitioner stating that there is clearly no aquifer in the area that can meet the definitional requirements to qualify as a USDW, while at the same time relying on and expressing concern about the safety of his low yield domestic water well.

¹⁰ It is true that your Petitioner performs consulting services for area oil and gas operators at a reduced fee or for no fee due to the economic hardship of the few surviving local "mom and pop" operators. However, Petitioner represents only his own interest herein, and no one has paid Petitioner one cent to support this action.

Yes, Petitioner has objected to the mechanical integrity testing imposed on the subject injection wells. *Id.* at 26. But that objection is based on the fact that EPA would impose the SAPT MIT on said wells, requiring a test pressure of 300 psi, a pressure exceeding the permitted operating pressure of these wells. This amounts to “destructive testing”, a dangerous practice not consistent with the spirit of the UIC regulations.¹¹ And yes, Petitioner objects to all unnecessary reports required by Respondent (even overly complex tax forms). *Id.* But once again, Respondent makes much of nothing. Petitioner merely objected to submission of reports of tests not required by the UIC regulations, and which would not have been required if the subject wells had remained rule authorized instead of being forced through the permitting process.¹²

¹¹ The SAPT as practiced by Region IV, and as required by the subject UIC permits, requires a test pressure of 300 psi. Two of the wells at issue herein have maximum injection pressure specified in the applicable UIC permit of only 210 psi (maximum permitted injection pressure is principally a function of well depth). This forces the operator to subject an injection well to potentially destructive pressures, exceeding the normal well operating pressure. EPA subjects deep wells operating at thousands of psi to the same SAPT test pressure as shallow injection wells operating at pressures significantly less than the 300 psi test pressure. There are documented cases where injection well integrity has been destroyed in just this fashion.

¹² The complained of requirement has the effect of requiring submission of routine operational testing, where the results do not reveal any problem that would require reporting under the UIC regulations. Region IV EPA lacks a records management system capable of dealing with such submissions.

Finally, Respondent raises an interesting issue in that Petitioner is not seeking to **require** the use of the safer annulus gel, or an open annulus. *Id.* Petitioner certainly would not object if the Court or EPA made annulus gel and open annuli mandatory permit conditions. But perhaps Respondent does not yet realize that several of the subject injection wells already contain annulus gel placed in them with EPA's blessing over ten years ago by the former operator. Further, the subject injection wells have historically been operated with an open annulus, only having the annulus closed for periodic MITs. Certainly this preferred mode of operation would continue if not barred by permit conditions.

None of Respondent's protestations about Petitioner's bad attitude bar him from expressing concern for his domestic water well.

2. Petitioner Has Article III Standing Due to Very Real Economic Injury

Petitioner will not waste the Court's time restating the arguments relating to Petitioner's economic injury set out in previous pleadings. However, in its Brief, Respondent has created a new and very real economic injury to Petitioner that requires no speculation or conjecture. Respondent now asserts that operating any injection well with an open annulus is violative of the SDWA. *Id.* at 47. Petitioner is a stockholder in several companies that own and operate

injection wells in the area at issue.¹³ If Respondent prevails, then Petitioner will be subject to enforcement action, and will be forced to expend substantial monies modifying wells and defending himself. Respondent has here inadvertently created a new and very real economic injury to Petitioner, and your Petitioner is horrified thereby.

B. Petitioner Can Show Article III Causation and Redressability

Petitioner will spare the Court a restatement of arguments contained in previous pleadings. However, Petitioner would again point to the never before enunciated position that operating Class IIR enhanced oil recovery injection wells with open annuli violates the SDWA. If Respondent prevails, your Petitioner, and many other operators, are in financial as well as enforcement trouble. There can be no doubt here about causation and redressability.

C. Petitioner Satisfies Prudential Standing Requirements

As a lay person, Petitioner is puzzled that Respondent would so tenaciously seek dismissal of this action using standing as a basis. Clearly, there are issues here that deserve a fair hearing. It is ironic that to avoid review of UIC permit conditions, Respondent would use the standing arguments most often advanced by industrial polluters defending citizen suits.

¹³ Under EPA's interpretation of the SDWA and the UIC regulations, Petitioner is also personally regarded as operator of said injection wells.

Petitioner is just as vitally interested in the well-being of his domestic water supply well as were the members of LEAF in LEAF v. EPA, 118 F. 3d, 1467 (11th Cir. 1997), a case in which EPA did not challenge standing. EPA did not even raise the standing issue in LEAF, but here Respondent produces eleven (11) new pages on standing in its brief. Respondent Br. 22-33.

1. The SDWA and Standing

Petitioner believes he has standing even absent any special provisions in the SDWA. The SDWA provisions on judicial appeal are clear, and are discussed in previous pleadings. Interestingly, Respondent's position negates the explicit language in EPA's own regulations with regard to the appeal of the EAB's Order herein. *See* 40 C.F.R. §124.19.

Respondent attempts to minimize the import of the economic interests language in the SDWA. Respondent's Br. at 32-33. In fact, said language is quite extraordinary; few laws forbid an implementing agency from prescribing requirements which "interfere with or impede" a regulated activity "unless such requirements are essential." 42 U.S.C. §§300h(b)(2) and 300h-1(c). Respondent asserts that no claim that the UIC permit conditions at issue would interfere with or impede oil production was made by Petitioner in this case below. Respondent Br. at 33. Respondent walks a fine line here; Petitioner

would never have pursued this matter unless he believed the matters for which he seeks review **do** unnecessarily interfere with and impede oil production.

2. Petitioner Advances Only His Own Rights and Interests

As discussed previously, Respondent has introduced a new and frightening wrinkle by alleging all Class IIR wells operated with open annuli are in violation of the SDWA. Petitioner has personal rights and interests at stake now, like never before!

ARGUMENT

The following discussion uses the same numbering as Petitioner's initial Brief.

I. Annulus Gel Was Improperly Excluded as Annular Fluid (II. A. in Respondent's Brief)

A. Corrosion Inhibitors Are Not a Regulatory Requirement for Class IIR Injection Wells (II. A. 1 in Respondent's Brief)

Respondent avers annulus gel is not a corrosion inhibitor and that 'is sufficient to support EPA's determination that it is not appropriate as an annular additive'. Respondent Br. at 35. Respondent's argument here is incredibly misleading. First, there simply is no regulatory requirement that Class IIR injection wells must have corrosion inhibitor additives (said requirement is

limited to Class I hazardous waste disposal injection wells).¹⁴ Respondent makes much of this alleged requirement, but a citation for the applicable regulation is conspicuously absent from Respondent's Brief **because there is no such provision.** If such a requirement existed, it would have been included in all UIC permits, but in fact, the subject UIC permits impose no such requirement, and specifically allow plain brine (salt water) with no corrosion inhibitor added as the annulus fluid. (A.R. 94 at Part I, Page 3, Apx. 98; A.R. 95 at Part I, Page 3, Apx. 119.) There are quite literally thousands of Class IIR injection wells with nothing more than plain brine or fresh water in their annuli with no additives of any kind.

Second, Respondent asserts that corrosion inhibitors must be approved by EPA, and refers to the 1998 National UIC Technical Workgroup report, "Use of Annulus Additives to Address Leaks in Deep Injection Wells". Respondent's Br. at 36. The approval methodology contained in said report, which report is not an EPA guidance document, might arguably be applied to annulus gel had it not already been approved a decade ago.¹⁵ However, it is not applicable to

¹⁴ Your Petitioner is unaware of a single injection well in the entire Easton Consolidated Field with corrosion inhibitor additives in the annular fluid, though quite a few contain annular gel.

¹⁵ The author of the 1998 report, Harlan Gerrish of EPA Region V, has stated that he was not aware that bentonite based annulus gel was approved in Region IV at least as early as 1990.

corrosion inhibitors. In fact, corrosion inhibitors, when they are used in Class IIR injection wells, are not pre-approved by EPA. As mentioned previously, the subject UIC permits do not mandate corrosion inhibitor additives, but merely require an after the fact annual report listing such inhibitors. (A.R. 94 at Part I, Page 5, Apx. 100; A.R. 95 at Part I, Page 5, Apx. 121.) The author of Respondent's Brief seems to confuse corrosion inhibitors with additives that address leaks.

Third, it is most telling that the 1998 National UIC Technical Workgroup report on additives that address leaks does not mention corrosion inhibition or corrosion even once. If corrosion inhibition was a "critical issue", why is it not listed as an important quality of an annulus additive for leak repair?

Respondent characterizes Petitioner's position on annulus gel as unsupported opinions. However, a great deal of information is in the record, and the AnaLog Services, Inc. "Annulus Gel" webpage has been viewed by hundreds of oil industry professionals and has thus been subjected to peer review ad nauseum (Petitioner has received scores of emails to prove it). (A.R. 122, Apx. 145-146.)

Respondent states that "whether or not gel will cause corrosion is irrelevant." Respondent's Br. at 36. Respondent does not challenge Petitioner's assertion that bentonite gel is no more corrosive than the type of water with

which it is made, and that annulus gel made with fresh water is inherently less corrosive than the plain brine (salt water) allowed as the annulus fluid by the permits at issue. Respondent asserts that what is important is “Whether it will inhibit corrosion.” *Id.* This statement is absolutely without merit; if annulus gel were subjected to the current approval standards, corrosion inhibition would not even be a factor, and in any event, the UIC regulations just do not require corrosion inhibitor additives for Class IIR injection wells.

The corrosion inhibition qualities of annulus gel are irrelevant.¹⁶ As a basis for denying annulus gel, the corrosive inhibition rationale is clearly arbitrary, capricious, an abuse of discretion, and not in accordance with the UIC regulations.

B. Annulus Gel Repairs Tiny Leaks (II. A. 2 in Respondent’s Brief)

Respondent’s argument here is again confusing. Annulus gel is *supposed* to repair “very small leaks”; of course Petitioner “*admits*” same. *Id.* at 38.

Bentonite gel has been used as drilling mud for a century or so. Its properties are well characterized, and its longevity and stability in bore holes is legendary. It is now used to grout the casing of water wells in many jurisdictions, something that would never be allowed by the regulatory

¹⁶ None of the foregoing precludes the addition of a corrosion inhibitor additive to annulus gel if an operator so chooses.

authorities if it did not possess long term sealing qualities. When it is used as annulus gel, the gel is mixed at the surface, then pumped into the injection well annulus until it occupies the entire annulus. It is an incredibly slippery, slimy, light grey gel with an almost translucent quality. Because it fills the entire annular space, any pressure differential across a small casing defect results in a repair consisting of “filter cake”. This repair is not temporary because any disturbance merely results in the formation of filter cake once again.

Respondent neglects the fact that annulus gel has been used in Kentucky since some time before 1990. Some Class IIR injection wells with annulus gel have passed multiple MITs with no difficulty. The efficacy of annulus gel is not based on theory or opinion; it has a long track record as a safe, effective, and very economical annular fluid.

EPA’s finding that annulus gel “has not been shown to be protective of the environment” is not based on sound scientific reasoning, and it ignores the long use of annulus gel in Region IV. As a basis for denying annulus gel use, EPA’s rationale here flies in the face of reason and history; it is clearly arbitrary, capricious, and an abuse of discretion

**C. Annulus Gel Was Approved in Region IV
(II. A. 3 in Respondent's Brief)**

Region IV EPA is simply incorrect in its assertion that annulus gel was not approved in 1990, or before. Respondent's Br. at 39. Respondent mischaracterizes Petitioner's experience with annulus gel. Petitioner has witnessed the use of annulus gel **while EPA personnel and EPA contract inspectors were actually present.** In rebuttal to EPA's position that Petitioner's deposition is not credible, Petitioner has included an additional sworn statement at Apx. 335-337. A sworn statement from Kenneth R. Ingle is also included at Apx. 342.

Respondent also attempts to minimize the impact of certain letters that clearly demonstrate that annulus gel was approved in Region IV. (A.R. 118, 119, 120, Apx. 338-341.) Said letters are further addressed in Petitioner's sworn statement. (Apx. 335-337.)

At first blush, it might seem incredible that EPA is so adamant about never having approved annulus gel. It might seem even more incredible that a "review of its files" and interviews with "several UIC inspectors with years of experience in the field" turned up nothing. Before concluding Petitioner needs psychiatric help, consider that this is far from the strangest such episode at Region IV. Region IV EPA has repeatedly lost documents, even letters of credit

representing many thousands of dollars, often never to be seen again.¹⁷ Region IV EPA has been unable to locate and produce documents sought in formal discovery that just a few days earlier were disclosed in a FOIA request. More than once, Region IV has inexplicably changed policy, even contradicting headquarters directives.

While Petitioner long ago gave up second guessing Region IV actions, there are some hints at an explanation. First, the two Region IV UIC personnel Petitioner is personally aware knew about annulus gel have both long ago left the UIC section. Further, the two contract inspector personnel Petitioner is personally aware witnessed the emplacement of annulus gel are long gone, and their firm long ago ceased to serve as the Region IV UIC contractor. That documents cannot be located is no surprise, it is more the norm. A single UIC enforcement officer, George Ford (of Clifton Banks spring test fame), is responsible for the reversal of Region IV policy on annulus gel, announcing the change during a telephone conference on April 3, 1997, and Region IV historically never lets go once it has bitten.¹⁸

¹⁷ In the UIC regulatory consultant community, Region IV EPA was referred to as “the great black hole” at 345 Courtland Street because of their propensity to lose documents (Region IV has since moved to much nicer quarters, losing even more documents in the process).

¹⁸ Mr. Ford is no longer an enforcement officer in the UIC Enforcement Unit, now referred to as the SDWA Enforcement Section.

Whatever the explanation, Respondent is incorrect that annulus gel was not previously approved in Region IV. Clear and compelling evidence establishes that annulus gel was approved in Region IV at least as early as 1990.¹⁹ Region IV's reversal of policy on annulus gel is arbitrary, capricious, an abuse of discretion, and an affront to fair dealing.

D. Annulus Gel Summary

There is no regulatory prohibition against annulus gel, nor is there a regulatory requirement that Class IIR injection wells must have corrosion inhibitors added to the annular fluid. Annulus gel is not inherently corrosive, and is no more corrosive than the fluid with which it is made. Annular gel is an all natural product that is environmentally safe and suitable for very long term emplacement. Annulus gel has been approved for use in Region IV since at least 1990, and its long term efficacy is well established. The chemistry and physics of annulus gel is well characterized and understood; it is used routinely in potable water wells, a very environmentally sensitive application. Annulus gel is very economical, an almost unique trait for anything associated with the oil field or with UIC compliance. To foreclose the use of this technology,

¹⁹ The use of annulus gel predates the existence of the UIC program; Petitioner saw it being used as early as 1975, and it is likely it was used long before that date as annulus fluid.

available and affordable to even the smallest “mom and pop” operator, is truly a horrible thing to do.

II. Open vs. Closed Annulus (II. B. in Respondent’s Brief)

Respondent observes that Petitioner “opines ... that he can successfully monitor for leaks visually”. Respondent’s Br. at 42. Petitioner has successfully monitored open annuli injection wells for leaks for 27 years. Respondent goes on to again mention the EAB Order finding that “the regulations authorize the Region to require monitoring of annulus pressure in appropriate circumstances.” *Id.* But the EAB erred in that finding, incorrectly citing 40 C.F.R. §146.8(b)(1). Respondent concedes there is no direct regulatory requirement for annulus monitoring or a closed annulus for Class IIR wells, and then attempts to shoehorn said requirements into 40 C.F.R. 146.8, but there is no fit. Respondent’s Br. at 45.

A. Open Annulus Preferred (II. B. 1 in Respondent’s Brief)

Respondent continues to distort the realities of detecting leaks by monitoring annular pressure behavior. *Id.* at 42-45. Petitioner prepared an “Open Versus Closed Annulus Comparison Table” as part of the second EAB Petition. (A.R. 116 at 23, Apx. 55.) An examination of said table, along with the accompanying text, reveals quite a different picture from the simplistic analysis offered by Respondent; for the shallow injection wells at issue, an open

annulus is the better mode of operation. (*See id.* at 18-25, Apx. 50-57.) Notably, Respondent makes the illogical statement that leaks would be somehow detected faster with a closed annulus, going on to state in footnote 7 that the wells at issue need only be monitored once a month. Respondent's Br. at 44. Injection wells are ordinarily visited more often than once a month, so how exactly will monthly annulus pressure readings find a problem faster than visual inspection of an open annulus every day or two? Further, there is no logical basis on which to conclude that a short lived leak from an open annulus would be worse than the same leak with a closed annulus where the leaking fluid may very well be displaced into an aquifer (or USDW if one were present). *Id.* (*See A.R.* 116 at 18-25, Apx. 50-57.)

Respondent now concedes that the regulations do not specify that the annulus must be monitored or that the annulus must be closed. Respondent's Br. at 45. Respondent then muddies the waters by advancing a novel notion – that absent a regulatory mandate for annulus monitoring for Class IIR wells, it can justify annulus monitoring with the regulation that sets forth MIT requirements, 40 C.F.R. §146.8. *Id.* Respondent bases its analysis on the use of the word “maintain” in 40 C.F.R. §§144.28(f)(2) and 144.51(q)(1), said word added as part of Reg-Fix in 1993. Respondent's reasoning is particularly

unavailing when viewed in light of the Reg-Fix preamble language quoted later herein.

The one and only MIT specified in the subject UIC permits is the 40 C.F.R. §146.8(b)(2) SAPT. (A.R. 94 at Part I, Page 2, Apx. 97; A.R. 95 at Part I, Page 2, Apx. 118.) The annulus monitoring / closed annulus requirement is not referred to as an MIT, or even listed in the “Tests” section. Rather, the annulus monitoring requirement is listed under “Section C. Operating Requirements, 2. Annulus Operation”. (A.R. 94 at Part I, Page 3, Apx. 98; A.R. 95 at Part I, Pages 3-4, Apx. 119-120.) Even absent this unambiguous distinction in the subject UIC permits, the annulus monitoring requirement set out therein is not and cannot be the MIT contemplated at 40 C.F.R. §146.8(b)(1). First, the post 1993 Reg-Fix amendments limit said MIT, often called the MAP, to “an annulus pressure different from atmospheric” (zero (0) psi), but 0 psi is exactly what EPA requires in the subject permits. 40 C.F.R. §146.8(b)(1). Second, Region IV EPA has **never** allowed the use of the real MAP MIT in Kentucky, even under the more permissive language predating Reg-Fix. Third, if Respondent’s analysis is correct that the annulus pressure monitoring requirement that appears in all Region IV Class IIR UIC permits is actually the MAP MIT, then said permitted wells are compelled to undergo two

MITs, while all rule authorized wells substantially identical in character need only undergo one MIT.

Respondent cites 40 C.F.R. §146.8(e) as giving EPA “considerable discretion in evaluating the owner or operator’s tests”. Respondent’s Br. at 45, footnote 8. That discretion does not allow the suspension of “an annulus pressure different from atmospheric”, a provision adopted as part of Reg-Fix because EPA’s experts deemed the use of the 0 psi MAP as an ineffective MIT.

The preamble to Reg-Fix provides as follows:

The Agency agrees that monitoring of annulus pressure is technically complex and is not suggesting that it should be required across the board. ... Such complex monitoring requirements are undoubtedly most appropriate where it is essential to have continuous monitoring of MI such as for hazardous waste injection wells. EPA agrees with the commenters that for most Class II wells, the required injection pressure and flow rate monitoring²⁰ coupled with a 5-year pressure test are adequate. ... Annular pressure monitoring is only a reliable test to demonstrate the integrity...when the annulus can maintain a pressure other than atmospheric, at the surface.²¹

58 FR 63893 (December 3, 1993).

²⁰ Here “injection pressure and flow rate monitoring” is a regulatory requirement applying to pressure and flow rate of the injectant, not to be confused with annulus monitoring.

²¹ 0 psi, 0 psig, atmospheric pressure at surface, or atmospheric pressure measured at surface can be taken as meaning the same thing for purposes of this discussion.

As mentioned previously, the AnaLog Services, Inc. technical webpages are peer reviewed to death, and the “Annulus Monitoring – Closed or Open Annulus?” page is no exception.²² (A.R. ?, Apx. 150-154.) No less an expert than Dr. R.M. McKinley, retired from Exxon, and sometimes consultant to EPA, agrees that for shallow injection wells, a closed annulus need not be required.

**B. EPA Has Allowed Wells to Operate With an Open Annulus
(II. B. 2 in Respondent’s Brief)**

Region IV EPA has historically allowed an open annulus for Class IIR rule authorized injection wells. Petitioner has accompanied EPA inspectors and EPA contract inspectors on inspections of scores of rule authorized injection wells with open annuli. Petitioner has been involved with the UIC program since its inception in Kentucky, and has never once seen a written document or even heard a UIC officer mention that rule authorized Class II wells must operate with a closed annulus. Further, Petitioner makes it a point to obtain and read the majority of administrative orders issued by the Region IV UIC enforcement crew, and has never seen a violation cited for an open annulus. Of course wells operated with an open annulus must have the valves on the wellhead closed to undergo periodic MITs if the SAPT is the test utilized. There

²² An earlier version of this webpage should be in the record (absent the reproduced EAB second Petition), but then even the second Order of the EAB is missing.

is no doubt whatsoever that Region IV EPA has allowed open annulus operation for rule authorized Class IIR injection wells. And this certainly is a major issue with respect to inconsistency. EPA's denial that open annulus operation of Class IIR rule authorized injection wells has been at least tolerated is astonishing.

C. Annulus Status Summary

Clearly the annulus pressure monitoring requirement in the subject UIC permits is not the MAP MIT; Region IV has never allowed the real MAP as an actual MIT in Kentucky. The Reg-Fix preamble makes it clear the MAP is not required in conjunction with the SAPT, and EPA technical experts acknowledge the MAP is problematic, and not even meaningful if conducted at 0 psi. Not only is a closed annulus therefore not mandated, but it is also inferior to an open annulus for the shallow Class IIR wells at issue herein. Respondent's own grossly incomplete argument against open annuli evinces an inadequate examination of the scientific data in the record. (*See especially* the table at A.R. 116 at 23, Apx. 55.) Respondent has yet to address studies proving a closed annulus can result in huge potentially destructive pressure buildups with just a few degrees of temperature change. (A.R. ?, Apx. 150.) Rule authorized Class IIR wells most assuredly are operated with open annuli in Kentucky; the consistency problem is obvious. The closed annulus requirement permit

decision is clearly arbitrary, capricious, an abuse of discretion, and not in accordance with the UIC regulations.

III. USDWs or No?

Petitioner no longer seeks a ruling from the Court on this matter.

CONCLUSION

The relief sought herein represents no retreat from environmental protection. Annulus gel is an excellent environmentally sound annulus fluid. An open annulus is the preferred mode of operation for shallow injection wells, in many cases allowing earlier detection of problems.

Respondent has based its decision herein on bad science and incomplete information. It has acted arbitrarily, capriciously, abused its discretion, and recklessly disregarded its own UIC regulations. Respondent now seeks the safe shelter of deference, not due it in this case.

Respectfully Submitted,

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REVISED CERTIFICATE OF COMPLIANCE

Pursuant to FRAP 32(a)(7)(C) and 6 Cir. R. 32, the undersigned certifies that this brief complies with the type-volume limitations of said rules.

1. Exclusive of the exempted portions at FRAP 32(a)(7)(B)(iii), this brief contains 6,989 words.
2. This brief has been prepared in a proportionally spaced typeface using Microsoft Word 2000, in the following font name and size: Times New Roman, 14 point.
3. The undersigned understands that a material misrepresentation in completing this certificate, or a circumvention of the type-volume limitations in FRAP 32 may result in the Court's striking the brief and imposing sanctions against the person signing the brief.

Syd H. Levine

CERTIFICATE OF SERVICE

I hereby certify that on September 7, 2001, two copies of the foregoing were served by first class mail, postage paid, on the following counsel of record:

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