



FRANCES GEORGE

182 IBLA 145

Decided April 24, 2012



United States Department of the Interior
Office of Hearings and Appeals
Interior Board of Land Appeals
801 N. Quincy St., Suite 300
Arlington, VA 22203

FRANCES GEORGE

IBLA 2011-205

Decided April 24, 2012

Appeal from a decision by the Acting Director, Appalachian Region, Office of Surface Mining Reclamation and Enforcement (OSM), affirming an earlier determination by the Pittsburgh Field Division, OSM, that no further action was warranted in connection with allegations of contamination of well water as a result of an underground coal mine operation. Frances George (11-05-Mining Operation).

Request for hearing granted.

1. Administrative Procedure: Administrative Record--Surface Mining Control and Reclamation Act of 1977: Appeals--Surface Mining Control and Reclamation Act of 1977: Citizens Complaints--Surface Mining Control and Reclamation Act of 1977: Inspections: 10-Day Notice to State--Surface Mining Control and Reclamation Act of 1977: State Program: 10-Day Notice to State

When OSM, on request for informal review, finds that an underground mining operation is not the cause of the contamination and deterioration of an appellant's well water supply, and the appellant files a motion for a hearing under 43 C.F.R. § 4.1286, raising specific issues of material fact regarding water quality and quantity and whether the mining operation caused or contributed to the well water problems, and the record without a hearing is insufficient for resolving those issues, the Board will refer the matter to the Hearings Division, Office of Hearings and Appeals, for assignment to an administrative law judge for a hearing on the issues raised by the appellant, and any other relevant issues identified after referral of the case for a hearing.

APPEARANCES: Emily A. Collins, Esq., Pittsburgh, Pennsylvania, for Appellant;
Thomas C. Reed, Esq., Pittsburgh, Pennsylvania, for Cumberland Coal Resources,

L.P.; Steven C. Barclay, Esq., Office of the Solicitor, U.S. Department of the Interior, Pittsburgh, Pennsylvania, for the Office of Surface Mining Reclamation and Enforcement.

OPINION BY ADMINISTRATIVE JUDGE ROBERTS

Frances George has appealed from a June 28, 2011, decision by the Acting Regional Director, Appalachian Region, Office of Surface Mining and Reclamation Enforcement (OSM), affirming an earlier decision of the Pittsburgh Field Division (PFD), OSM, that no further enforcement action against Cumberland Coal Resources, L.P. (Cumberland),¹ was warranted in connection with the contamination of George's well, identified in these proceedings as well W1, alleged to have resulted from Cumberland's underground coal mining activities. In this decision, we refer the matter for a hearing in accordance with 43 C.F.R. § 4.1286.

I. BACKGROUND

A. Initial Proceedings

In June 2007, Cumberland informed George of its intent to conduct underground mining operations beneath her home at 1442 Kirby Road in Waynesburg, Pennsylvania,² and of its intent to conduct a pre-mining survey of her water supply. In December 2007, Moody & Associates (Moody), a hydrogeology consulting firm hired by Cumberland, conducted the survey, taking water samples directly from George's tap³ and interviewing her about the yield and quality of her water. Cumberland began development mining activities, precedent to longwall mining operations, in January 2008. In May of that year, Cumberland conducted

¹ In several documents in the record, the operator of the Cumberland Mine, the underground mine that is alleged to have caused contamination and diminution of George's well water, is identified as Alpha Natural Resources (Alpha). Cumberland is a subsidiary of Alpha and is the permittee of record. We use Cumberland in this decision when discussing the operator of the Cumberland Mine. See Administrative Record (AR) 17 at 1.

² George's home is located in Green County, Pennsylvania, in Whitely Township.

³ The utility of these water samples in comparing pre- and post-mining water quality and quantity is a matter of debate between the parties, as discussed *infra*.

room-and-pillar mining⁴ to within 110' to the east of George's water well, and later that summer Cumberland mined 320' south of the well. Longwall mining began shortly thereafter and continued until April 2010, at which point panel LW-57 was located 725' to the west of the well. See Statement of Reasons (SOR) at 5.

The specific proceedings giving rise to this appeal were initiated on March 31, 2010, when Charlotte Connors, George's daughter, notified the Pennsylvania Department of Environmental Protection (PADEP)⁵ of contamination of her mother's well. By letter dated April 5, 2010, PADEP informed Cumberland that George's water supply falls within the rebuttable presumption zone of Cumberland's underground mine and, as a result, a temporary water supply was to be immediately provided to George. AR 14a. PADEP further stated that Cumberland was responsible for promptly restoring or replacing the affected water supply with a permanent water supply.

1. The Moody Report

Cumberland then requested that Moody review George's well and water distribution system and evaluate whether the degradation of water quality was

⁴ Cumberland takes the view that it does not engage in room-and-pillar mining, but operates a longwall mine, using room-and-pillar mining to develop access areas where extraction will occur. But at the same time it makes this statement, Cumberland acknowledges that the development mining it conducts is "technically a form of room and pillar mining." Cumberland Answer at 18. This distinction makes no difference in the context of George's complaint, since it is Cumberland's underground mining activity, regardless of what it is labeled, that George alleges contaminated her well water.

⁵ PADEP has primary jurisdiction over underground mining operations on non-Federal lands. See 47 Fed. Reg 33050 (July 30, 1982); 30 C.F.R. § 938.11. In Pennsylvania, the Bituminous Mine Subsidence and Land Conservation Act governs underground coal mining operations, including room-and-pillar and longwall mining. 52 P.S. § 1406.5b; 25 Pa. Code § 89.153a. The approved Pennsylvania program presumes that the mine operator is responsible for "the contamination, diminution or interruption of a water supply that is within the rebuttable presumption area," or rebuttable presumption zone. 52 P.S. § 1406.5b; 25 Pa. Code § 89.153a. The statute defines the rebuttable presumption zone as "an area above the mine determined by projecting a thirty-five degree angle from the vertical from any coal removal area." 52 P.S. § 1406.5b. A mine operator "shall promptly restore or replace the affected water supply with a permanent water source which adequately serves the premining uses of the water supply and any reasonably foreseeable uses of the water supply." 52 P.S. § 1406.5a(a)(1); 25 Pa. Code § 89.145a.

attributable to Cumberland's mining activities. Moody presented the results of its evaluation in a report dated May 5, 2010 (Moody Report). By way of background, Moody stated that its review took into account the quality of George's well water when Moody conducted the 2007 pre-mining, as well as other data and information gathered during Moody's pre- and post-mining evaluations of the well. AR 14b at 1.

Many of the details reported by Moody are not in dispute. Moody stated that on December 5, 2007, it had collected "pre-mining water data" related to the well for general information purposes, and had collected a "water quality sample for laboratory analysis." *Id.* at 3.⁶ Moody noted that the subject well is a 6-inch diameter well that, according to George, was drilled in 1957 to a depth of approximately 120' below the ground surface (bgs). The well is located approximately 2' north of the George residence's front porch, and the wellhead is buried approximately 2' bgs. Moody conducted a "site evaluation" on April 23, 2010, and observed that "the well was fitted with a split well seal and an approximate 0.25-inch diameter PVC vent pipe that was damaged and had been truncated approximately 1-foot below the ground surface." *Id.* George informed Moody that "she had the submersible pump within her well replaced in March 2010 due to low water pressure." *Id.* There is a 1,000-gallon capacity concrete cistern that is buried on the western side of the George residence. Moody "noted that calking at the bottom of the lid appeared to be partially deteriorated." *Id.* There is a "Coyote® controls system" incorporated into the water supply system that is controlled by a float switch within the cistern tank. Moody stated that, according to George, the water treatment system was installed in 2001 "due to the presence of undesirable odors and water quality." *Id.*

Moody cautioned that the pre-mining sample "was collected after the water treatment system [was installed], and therefore, *does not properly represent the well's pre-mining period condition.*" AR 14b at 3 (emphasis added). Moody explained further that a "performance test" was not performed on the well because "it was buried and the Coyote® controls/cistern configuration could not be properly configured to facilitate a continuous pumping period." *Id.* It stated that when it conducted the pre-mining survey, George indicated that "she began experiencing water quality issues with her well in 2001, and as a result, a water treatment system

⁶ Moody indicated that "[t]he nearest development mining activities occurred approximately 510 feet to the west of W1 in August and September of 2008, and approximately 350 feet to the south of W1 in July 2008," and that "[t]he nearest longwall mining to well W1 was associated with the LW-57 longwall panel," which began "in October, 2009, approximately 8,750 feet to the east of W1, and as of April 19, 2010, the LW-57 panel was approximately 725 feet to the west of W1." AR 14b at 2.

was installed.” *Id.* She also indicated that “the well would occasionally go dry, beginning in 2004.” *Id.* Moody reiterated that “[b]ecause the pre-mining sample was taken after treatment, . . . *the results cannot be utilized to access the actual pre-mining period water quality characteristics of the well and/or aquifer.*” *Id.* (emphasis added).

Moody stated that on April 1, 2010, it collected water quality samples from George’s cistern and from an inside spigot, but that “[a] sample could not be collected from the well because it was buried and the inflow pipe to the cistern tank was submerged.” AR 14b at 4. Moody indicated that when it collected the water sample from the cistern, it “noted a strong odor and an abundance of an orange-colored algae-like material, suspected to be iron bacteria, floating in the cistern and on the walls of the cistern.” *Id.* During its visit to the George property on April 23, 2010, Moody “conduct[ed] a photographic documentation of the well as it was hand-excavated by Higgins Hauling.” *Id.* Moody stated that during the excavation, it “noted that the soil immediately surrounding the wellhead was highly saturated and that the aforementioned 0.25-inch diameter PVC vent pipe was broken,” and that “the 6-inch steel casing was rusted and pitted, but appeared to be intact.” *Id.*

Moody “conducted a downhole video survey of the well to evaluate the condition of the well and casing,” which “showed the casing to be rusted and heavily pitted, but [with] no apparent holes or cracks . . . in the steel casing.” AR 14b at 4. When the “camera reached the water level within well W1[,] the orange-colored algae-like suspect iron bacteria observed within the cistern was prevalent throughout the well’s water column.” *Id.* Moody stated: “Heavy orange staining and suspect iron bacteria growth was observed at the 59-ft depth fracture, and the orange staining extended downward within the well bore to the depth of the pump intake, which was at approximately 91 ft bgs.” *Id.* Moody indicated that “[t]he pump was observed to be approximately 91 ft BTOC [below the top of the well casing] which is where one of the apparent bedding plane fractures in the well is located,” and that “[h]igh concentrations of the aforementioned algae-like suspect iron bacteria material were present on top of the pump.” *Id.* Moody explained that “[t]he video camera could not be lowered below the pump, so the survey ended at approximately 91 feet.” *Id.*

Moody deemed it “reasonable to believe that an iron bacteria problem may have existed within well W1 previously, and that the well’s condition has progressively deteriorated over the past decade since quality issues were first noted, especially since the well was drilled over 53 years ago.” AR 14b at 6. In reaching the conclusion that “mining related subsidence” had not caused the deterioration in the well’s water quality, Moody stated the following:

It is Moody's understanding that mining subsidence may be capable of contributing to iron bacteria contamination of a well, in cases where subsidence has caused the well casing to become damaged. Also, because mining subsidence can increase the aquifer's permeability through fracturing, it may be possible in some instances, for the increased permeability of the aquifer to facilitate dispersion of iron-bacteria that was already present within surface water bodies, other portions of the aquifer, and/or within other wells. However, based on the results of the George property evaluation, there is no evidence that mining-related subsidence occurred within well W1 or within the surrounding aquifer that would allow for any mining-related well contamination to occur. Additionally, Mrs. George stated that she had experienced similar water quality issues with her well prior to mining. As such, based on the available data and information at this time, it does not appear that [Cumberland] has adversely affected well W1.

Id. at 6-7.

2. PADEP's Response

By letter dated May 18, 2010, PADEP responded to George's complaint, stating that it had conducted an investigation and concluded that underground mining was not linked to her well water problems. AR 3. Enclosed with the letter was a copy of the Moody Report. AR 3, Attachment 2; AR 14b. Also enclosed with the letter was a one-age report by John Kernic, a PADEP employee. AR 3, Attachment 1. In his report, which he based on the Moody Report, the mine permit file, and 6-month mining maps, Kernic stated that the physical condition of the well and cistern was very poor, with evidence of surface water leakage, as indicated by the presence of coliform bacteria, and that the high presence of iron bacteria was causing an odor problem and was clogging the filters. He stated that high levels of iron bacteria "can reduce the capacity of wells and their delivery systems by clogging filters, creating sludges in the bottom of wells and even clogging fractures providing groundwater to wells." *Id.* at Attachment 2. He ended his correspondence by recommending "that the well and cistern be cleaned and disinfected to alleviate the problems and provide suitable drinking water to the household." *Id.*

B. George's Citizen Complaint

By letter dated June 29, 2010, Connors informed PFD's Johnstown Area Office (JAO) that problems with her mother's well began in the fall of 2009. AR 1; see 30 C.F.R. § 842.12. She stated that the well was contaminated with sediment that clogged the faucet heads and the filters in her system, and that the water "had a smell

of motor oil and an oily film was visible inside her system and an orange slime was growing inside.” *Id.* She explained that the well was 60' deep when first drilled in 1957; that in 1975 it was deepened to 120'; and that in 1988 a 1000-gallon cistern was installed. She stated that the water quality began to diminish in 2002, but that her mother “never had iron algae or iron bacteria in her well or cistern.” *Id.* Her conclusion was that “the ground ha[d] been disturbed by the mining allowing the iron bacteria and iron algae to enter her well and the regional aquifer.” *Id.*

C. The Ten-Day Notice and PADEP's Response

On July 7, 2010, JAO issued Ten-Day Notice (TDN) No. X10-121-273-002, TV2 to PADEP with two alleged violations: (1) Cumberland had damaged a potable water well, but had failed to provide a permanent alternative water supply; and (2) Cumberland had not provided a permanent water supply, while failing to meet the exemptions of 25 Pa. Code § 89.152(b). AR 2. The TDN informed PADEP that it had 10 days within which to “take appropriate action to cause the violations described . . . to be corrected, or to show cause for its failure to do so.” AR 2 at 1.

By letter dated July 8, 2010, PADEP responded to the TDN. AR 3. PADEP informed JAO that it had investigated the complaint and had issued its determination on May 18, 2010, described above. PADEP enclosed a copy of the Moody Report with its May 18, 2010, letter. PADEP stated that since it had concluded that George's water supply problems are not related to Cumberland's underground mining operation, it did “not believe a violation exists.” AR 3.

D. The PFD's Review of PADEP's Response

PFD reviewed PADEP's response to the TDN and by letter dated September 24, 2010, concluded that PADEP's “response [was] arbitrary, capricious, or an abuse of discretion under 30 C.F.R. § 842.11(b)(1)(ii)(B)(2).” AR 5. PFD stated that it had “reviewed all of the information provided,” particularly the Moody Report, in reaching its conclusion. PFD based its determination upon deficiencies related to the following four factors:

1. There was no valid premining water quality sample taken as required by [25 Pa. Code §] 89.145a and as reflected in [25 Pa. Code §§] 89.152(a)(3)(i) and 89.153(b). Without a premining sample, it can only be postulated that the mining activity did not cause or contribute to the growth of iron bacteria thereby contaminating the water supply, or worsening a condition already present. The Moody report offers little evidence leading to the conclusion that the well fouling problem pre-existed the approach of the mine, or that the

complainant's allegation that the condition got worse as the mine approached, was coincidental. Without the evidence, the presumption of responsibility cannot be successfully rebutted.

2. Ground water data from the permit file was not discussed in the response. This data could have documented any fluctuations in the water level as the mine approached. Distance of the water supply to mining is not, on its own, a reliable indicator of potential impact. It is recognized that fluctuations in the ground water level in a well due to fracturing of the water bearing geologic formations can cause or increase the propagation of iron oxidizing bacteria. Signs of subsidence do not have to be visible in the well bore.

3. PADEP did not investigate, or cause the investigation of other wells in the immediate vicinity of the complainant to determine if there were similar issues with diminished water supply or degradation of water supply.

4. PADEP did not conduct a home visit with the complainant to corroborate and clarify statements made to or information collected by Moody regarding the contamination.

AR 5 at 2-3.

E. PFD's Inspection and Investigation

Under 30 C.F.R. § 842.11(b)(1)(iii)(A), a state regulatory authority may request informal review of a determination that its response to a TDN was arbitrary, capricious, or an abuse of discretion within 5 days of receiving that determination. PADEP did not request informal review of the PFD's determination. Accordingly, by letter dated November 2, 2010, PFD informed Cumberland that, in accordance with 30 C.F.R. § 842.11(b)(1), it had initiated a Federal inspection of Cumberland's Permit No. 30831303 "to determine if underground mining operations have caused contamination, diminution or interruption of the Frances George well water supply." AR 9 at 1. PFD instructed Cumberland to provide a temporary water supply to the George residence within 24 hours of receipt of the November 2, 2010, letter, and to continue the temporary supply until further notification from OSM. *Id.*

On November 17, 2010, PFD undertook a Federal inspection with a site visit that included George, members of PFD, and a hydrologist from OSM's Appalachian Region Office in Pittsburgh, Pennsylvania. The hydrologist, Jay Hawkins, conducted

an investigation and subsequently issued a report of his findings on January 20, 2011 (Hawkins Report). AR 12.

1. Moody's Response to PFD's Determination

By letter to Hawkins dated December 17, 2010, and on behalf of Cumberland, Moody responded to PFD's determination that PADEP's response to the TDN was arbitrary, capricious, or an abuse of discretion under 30 C.F.R. § 842.11(b)(1)(ii)(B)(2). AR 11. Moody reiterated its conclusion that Cumberland's underground mining activities did not adversely affect George's well water.

With regard to PFD's conclusion that Moody had not taken a valid pre-mining water sample, Moody stated that PFD's "assertion . . . is based entirely on the incorrect assumption that to be 'valid' a pre-mining water sample from a well must be taken prior to treatment." *Id.* at 1. Moody emphasized that "Pennsylvania's approved program . . . , specifically 25 Pa. Code § 89.145a, **does not** impose a requirement that to be valid a pre-mining sample must be taken before treatment." *Id.* (citing PADEP's Technical Guidance Document No. 563-2112-605, *Water Supply Replacement and Permitting* (effective date, Dec. 31, 1998)).⁷ Moody stated that George's well and cistern "were both sealed and not readily accessible and Ms. George's distribution system was such that there were no valves present prior to treatment from which a 'raw water' sample could be taken." *Id.* at 2. In addition, Moody pointed out that George "had been 'treating' her well water for many years prior to mining, [so that] a sample of her 'treated water' was representative of her pre-mining quality." *Id.*

Moody further disputed PFD's assertion that Moody or PADEP should have reviewed groundwater level monitoring data in connection with their investigations. Moody disagreed with PFD's basic premise "that if such data was available it 'might' show . . . that mining caused fractures in the overlying strata which, in turn lead to fluctuations in groundwater levels either causing the propagation of iron bacteria or an increase thereof." *Id.* Moody explained that "such data is unavailable . . . because Cumberland did not conduct on-going groundwater level monitoring in the vicinity of the George property, other than the required pre-mining water levels obtained for the permit application." *Id.* Moody stated that "[w]hile such data might be useful, there is no requirement in Pennsylvania's approved regulatory program that such monitoring be conducted," and that "[i]t is . . . unreasonable to suggest that it is 'arbitrary' to not have reviewed information which is not required to be collected." *Id.*

⁷ This document is available at <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-47965/563-2112-605.pdf> (last visited Mar. 16, 2012).

Moody questioned PFD's assumption that direct visual evidence from the well video that showed the absence of subsidence does not establish that no fracturing took place. In Moody's view, PFD improperly downplays the importance of the well video as direct evidence. That evidence, according to Moody, "establish[ed] that no subsidence-induced fractures were present in the well bore itself," and showed "that the 'source' of the iron bacteria was through a naturally occurring bedding plane fracture present approximately 59 feet below the ground surface." *Id.* Moody deemed such visual evidence to be "extremely relevant to the inquiry of whether subsidence fracturing caused (or contributed) to infiltration of contaminants into a well." *Id.*

In response to PFD's assertion that PADEP should have sought to determine whether other residences in George's area had alleged complaints regarding water quality, Moody stated that "there is no reason to assume that PADEP was unaware of whether or not other 'complaints' had been filed," and that, in fact, a "complaint filed by a Mr. Greenwood in the summer of 2010, a neighbor of Ms. George, is being investigated by PADEP." *Id.* Moody provides no indication of whether Cumberland viewed itself as responsible for Greenwood's well problems, but we do learn from Hawkins' response to George's subsequently filed Informal Review Request that Cumberland decided to provide water to the Greenwoods. *See* AR 15 at 1.

Moody took issue with PFD's criticism that PADEP failed to confirm the accuracy of statements in the Moody Report attributed to George regarding the well water problems she experienced prior to Cumberland's mining activity, and the similarity of pre-mining odor problems with the current quality of her well water. Moody stated that "Cumberland and Moody have no knowledge as to whether PADEP did, or did not, seek to confirm with Ms. George what she told Moody representatives," but that "OSMRE can be assured that Moody's pre- and post-mining period reports accurately reflect what Ms. George told Moody representatives." AR 14b at 3.

Moody rejected "the only 'theory' being advanced to make Cumberland responsible for Ms. George's 'current' problem," which is that "mining in the area . . . caused mining induced fracturing of the strata in the vicinity of Well W1, which in turned caused fluctuations in groundwater levels sufficient to cause iron bacteria to enter the aquifer supplying that well." *Id.* Moody stated that in 2009 when George claims she first experienced well water quality problems, "Well W1 was located a substantial distance (close to 500') outside the 35 degree angle of draw from what was then the closest full extraction mining occurring in Panel PW-56 and over 1,200 feet from the edge of that panel." *Id.* Moody averred that at such distances the potential for mining-induced fractures to develop near George's well

“is so unlikely that to suggest ‘strata fracturing’ is the (or even ‘a’) contributing cause to her well water quality would be pure speculation and not a reasoned conclusion.” *Id.* at 4. Moody stated that this unlikelihood is “confirmed by direct evidence as to the post-mining condition of the area of the Cumberland Mine itself, which lies almost directly beneath the George property.” *Id.*

Moody explained that, on behalf of Cumberland, it had previously submitted to OSM “a map showing the area within the Cumberland Mine (in relationship to overlying George property), which was last fire-bossed on May 22, 2010, prior to commencement of sealing activities, together with a copy of the fire-boss report for that day.” *Id.* at 4. Moody stated that this report confirms that as of May 22, 2010, “the roof remained intact and the area ‘safe to enter.’” *Id.* Moody concludes that “if the roof and remaining roof/surface support pillars remained stable months after mining there can be little question that the strata above the mine was not subjected to stresses which would cause it to be fractured.” *Id.*

2. *The Hawkins Report*

In his January 20, 2011, report, Hawkins described the geology and the groundwater movement of the area where George’s well is located (AR 12, Hawkins Report, at 1-2); he examined water sampling results (*id.* at 4), the applicability of precipitation events to water sampling (*id.* at 6-7), and mining history (*id.* at 7-9); he interviewed five people representing business and private water supply users in the area to determine the quality of their water supplies (*id.* at 9-11); and he conducted a field examination of Whitely Creek and State Route 2018 to determine whether there was evidence of subsidence from the Cumberland mine (*id.* at 11).

Hawkins reviewed the borehole video of George’s well taken during Moody’s hydrologic investigation. He stated that the well “has a split compression fitting cap with the piping passing through the center,” and that there were “[s]ufficient gaps . . . visible in the cap, pipe and wiring access points to permit small quantities of soil and/or shallow ground water to enter directly into the top of the well.” *Id.* He observed that “[t]he casing showed considerable rusting and pitting increasing with depth,” which, “given the age of the well . . . is expected,” and that the casing was not “grout sealed.” *Id.* Importantly, he noted that there are “expected stress-relief fractures . . . intersected by the well bore,” that there was “no indication that these fractures were newly formed, induced by mine subsidence or that existing fractures were accentuated by subsidence,” and that there was “[n]o horizontal displacement . . . in the cased and uncased well bore.” *Id.*

In his report, Hawkins documented and analyzed a great deal of highly technical information and data. He concluded that “[t]here is no indication that the

mining conducted by Alpha in the Cumberland mine has caused the problems being experienced by Mrs. George.” *Id.* at 13. He stated that the mine “was more than a thousand feet away from Mrs. George’s well when she first perceived that there was a problem with her well,” and that “[t]he timing of the encroachment of the longwall panels (LW-56 and LW-57) do not coincide with the problems expressed by Mrs. George or other nearby residents.” *Id.* He was of the view that George’s “water quality has been slowly deteriorating long before the fall of 2009,” and that “[t]he deepening of the well and the addition of the cistern are clear indications that yield problems have persisted for years.” *Id.* He asserted that “[t]he sampling and analyses [of] the well sampled in 1997 compared to the samples collected [in] 2010 do not indicate that the water quality has changed,” but acknowledged that “there are some procedural problems with the sampling.” *Id.* He stated that the borehole video showed “high amounts of bacterial colonies growing on and coating the side of the bore and floating in the water column, which indicates the conditions in the well have permitted the growth of these bacteria for an extended period of time.” *Id.*

Hawkins noted, based on historic water sampling, that iron in the shallow ground water system is common, and that many wells in the area “have noticeable, by smell, concentrations of hydrogen sulfide.” *Id.* He stated that “[g]iven the levels of iron and hydrogen sulfide in the water[,] it would only take a slight change in the aquifer, well[,] or treatment system for the problems to become apparent to residents who did not previously notice them or appear worse to people who have been already treating for them.” *Id.* He indicated that “[t]he configuration of the buried well casing and cap along with the lack of the pitless adapter are conducive to the introduction of bacteria into the top of the well”; that “[i]t is likely these bacteria . . . have been in the well for quite some time”; and that the bacteria “have either increased slowly with time and/or slight recent changes in water quality have [led] to their proliferation in the well.” *Id.*

Hawkins stated that, given the characteristics of the relevant shallow ground water aquifer(s), wells in the “general area are not known to be high yielding,” as is “readily apparent by the number of wells that had to be redrilled, deepened[,] or augmented with another well, as well as the number of cisterns that have historically [been] employed to make the water systems viable for individual homeowners.” *Id.* at 13-14. He posited that even a small increase in usage could “over tax an aquifer that is already marginal to subpar,” which could affect “water quality and possibly yield rates.” *Id.* at 14. He stated that H.K. Enterprises, a trucking business located about 1,500' up the valley west of the George home has been growing in recent years, and the “dramatic increase in ground-water usage is one possibility of the perceived changes observed at Mrs. George’s well.” *Id.* In any case, he found “no data or information that indicate[s] that the mining by Alpha in the Cumberland mine has adversely impacted her well.” *Id.*

3. PFD's Post-Investigation Decision

By letter dated January 31, 2011, PFD informed Cumberland and Connors that PFD had completed its investigation and had found no evidence that Cumberland's underground mining operations caused or contributed to the degradation of George's water supply. AR 13. PFD included a copy of the Hawkins Report with the letter. PFD stated that its investigation was concluded; that it would take no further action on George's complaint; and that the November 2, 2010, mandate that Cumberland provide a temporary water supply to the George residence was lifted.

F. George's Informal Review Request

On March 1, 2011, the Environmental Law Clinic, University of Pittsburgh School of Law, on behalf of George, filed with the Acting Regional Director, Appalachian Region, OSM, a request for informal review (Informal Review Request) of PFD's determination that Cumberland had not caused or contributed to the degradation of George's well water and that PFD would take no further action on George's complaint. AR 14. George's Informal Review Request was based upon what George calls discrepancies between OSM's September 24, 2010, determination that PADEP's decision was arbitrary, capricious, or an abuse of discretion, and PFD's January 31, 2011, determination that Cumberland's mining activities were not related to the degradation of George's well water supply.

George disagreed with PFD's January 31, 2011, determination that there is no data or information to indicate that Cumberland's mining activity adversely impacted George's well. George maintained that PFD should have concluded that the "problematic pre- and post-mining samples do not allow for a proper comparison of pre- and post-mining water quality and quantity." *Id.* at 5-6. George stated that the Acting Regional Director should review PFD's determination and find that Cumberland should replace George's "water supply because the rebuttable presumption applies and the mining operator has neither rebutted the presumption nor shown that an exception to liability applies." *Id.*⁸

⁸ George contends that under Pennsylvania's approved program, PFD correctly concluded that PADEP's response to the TDN was arbitrary, capricious, or an abuse of discretion. Under 52 P.S. § 1406.5b, a mine operator must provide replacement water supplies to those who have suffered from contamination, diminution, or interruption of a water supply where (1) the rebuttable presumption applies and has not been rebutted by way of defenses provided in 52 P.S. § 1406.5b(c); (2) the rebuttable presumption does not apply, but the landowner affirmatively proves that underground mining caused the contamination, diminution, or interruption;

(continued...)

George argued that PFD had properly found PADEP's response to the TDN to be arbitrary, capricious, or an abuse of discretion because of PADEP's failure to "investigate, or cause the investigation of wells in the immediate vicinity of the complainant to determine if there were similar issues with diminished supply or degradation of water quality." AR 5 at 3. George asserts that PFD's January 31, 2011, letter fails to "remedy this deficiency," in that Hawkins had "only interviewed those with water supplies to the west of Ms. George rather than neighbors with water supplies toward the mining (and similarly within the rebuttable presumption zone) to the east of Ms. George." AR 6 at 6.

George contended that Hawkins did not interview Tricia Black, who resides within 100' to the east of George and who is being provided with replacement water by Cumberland. George stated that Cumberland's "mine workings" came within 110' of her well in May 2008 and within 320' of the well in August and September 2008; that she reported changes in her well in April 2010; that Black started to notice that the quantity of her water was decreasing; that Cumberland tested Black's water and determined that it "needed to install a permanent water supply that includes a treatment system"; and that Cumberland "assumed all responsibility for the damage to Ms. Black's water supply, and, according to Ms. Black, is providing replacement water to properties next to Ms. Black." *Id.* at 6-7.

George challenged Hawkins' "attempts to cast Ms. George's water contamination problem as a pre-existing condition," arguing that he failed "to evaluate the worsening of quality and quantity of Ms. George's water in the context of Alpha's mining activities." *Id.* at 7. She alleged that she "experienced a dramatic increase in the amount of black particulate matter clogging her water treatment filters over a course of time during which Alpha's underground mining activities were being conducted," and that

[e]ven if there were a preexisting condition, the aggravation of that condition would correlate with Alpha's mining activities, and any

⁸ (...continued)

or (3) the mine operator has not shown that one of the exceptions in 52 P.S. § 1406.5b(e) apply. The exceptions provided in § 1406.5b(e) relieve the operator from liability where the operator proves that the contamination, diminution, or interruption (1) existed prior to the mining activity as determined by a premining survey; (2) occurred more than 3 years after mining activity occurred; or (3) occurred as a result of some cause other than the mining activity. 25 Pa. Code § 89.154a(a)(1)(iii).

worsening of a pre-existing condition, including iron concentration, within 3 years after mining activities falls under the rebuttable presumption in Pennsylvania law and has not been overcome by an exception in 52 P.S. section 1406.5b(e).

Id.

George challenged Hawkins' report on the basis that he failed to account for fluctuations of groundwater levels as the mine approached the well and how those fluctuations could have affected George's well water supply. She also questioned Hawkins' conclusion, based upon the video recording of the well, that because there were no "newly-formed" cracks from mine subsidence, there was insufficient evidence to find that mining is the cause of problems with George's water supply. She noted that Hawkins' conclusion is inconsistent with PFD's September 24, 2010, decision, which stated: "It is recognized that fluctuations in the ground water level in a well due to fracturing of the water bearing geologic formation can cause or increase the propagation of iron oxidizing bacteria. Signs of subsidence do not have to be visible in the well bore." AR 5 at 3.

Finally, George questioned Hawkins' suggestion that a possible cause of George's water contamination and diminution is a nearby business, H.K. Enterprises, that uses water for washing its fleet of trucks. She asserted that historically the business location is on the site of the old Kirby school, which used a great deal of water for its staff, students, and general operations from the same source now used by H.K. Enterprises, and that use by the school could have drawn down the aquifer to an even greater extent than the business. She noted that the school closed in 1993 and had 24 students at the time of its closing.

G. Hawkins' Review of the Informal Review Request

At the request of the Acting Regional Director, on March 3, 2011, Hawkins provided a review (Hawkins Review) of and comments on George's Informal Review Request. With regard to George's claim that the pre-mining samples were inadequate, Hawkins agrees that "the pre-sampling has left a lot to be desired." AR 15 at 1. However, he reiterated that "the plumbing configuration of the George water system made sampling of the water prior to the filter/treatment system impossible without physically cutting into the plumbing or removing of the George pump and pumping the well with a separate system," and that Cumberland may have refrained from pre-mining sampling to avoid the "liability and logistical issues created by these actions." *Id.* He conceded that "the pre-mining sampling could have been conducted better," but insisted that "it is not without some merit which allows comparison." *Id.* He stated that he addressed the "shortcomings and the viability of

several chemical parameters of the sampled water” in his previous report. *Id.* He stated that “the external cistern and treatment system do cause some problems with some parameters but not others,” and that “conservative parameters, those that pass through the plumbing system pretty much unaffected, indicate that there has not been a change in water quality due to mining.” *Id.*

Hawkins stated that he made several unsuccessful attempts to contact the Black family. Nonetheless, he stated that he “was fully aware of the water supply problems that the Blacks were having and that Alpha had elected to replace their system.” *Id.* He stated that “[e]ven without talking directly to the Blacks, [he] included their problems into the information considered during [his] investigation,” and “definitely factored [them] into [his] overall decision.” *Id.* He expressed his view that “[t]he fact that Alpha elected on their own to replace the Blacks['] water supply system does not mean an admission of guilt that they degraded the original system.” *Id.* “Often an operator will do this as a *good neighbor gesture*,” he stated. *Id.* (emphasis added).

Hawkins maintained that George’s well water problems are “pre-existing.” *Id.* He stated that “biological (bacterial) contamination commonly worsens over time; the colonies get larger, which they themselves cause some geochemical changes in the water.” *Id.* He stated that “[s]ometimes this worsening occurs as a natural progression,” but acknowledged that at “other times it is due to changes in the water quality or quantity or in well usage.” *Id.* Again, he reiterated that he had found no indication that George’s water quality had changed because of mining. He acknowledged that longwall mining can cause fluctuations in water levels, but noted that “there are no piezometer data for this area that documents these fluctuations.” *Id.* He explained that because he had determined that mining was not the cause of George’s well water problems, he had “attempt[ed] to determine what may have caused the problem.” *Id.* at 2. This attempt apparently led to his speculation that perhaps use of the old Kirby School well by H.K. Enterprises and a sister business had caused depletion of the aquifer.

Hawkins stated further that he “most certainly did consider how much water would have been used when the school was open compared to the two industrial businesses that now use the well.” *Id.* He calculated that each of the 24 students and “say 5 staff members” would have used 15 gallons or less of water per day, totaling no more than 300 gallons, whereas to wash a single large truck would conservatively take 45 to 60 minutes at 3 to 5 gallons per minute, equaling between 135 and 300 gallons for a single wash operation. He concluded that when adding other washed equipment and other water uses at the two businesses, it would be reasonable to assume that far more water will be withdrawn from the old school well on a daily basis by the current businesses. He remained convinced that George’s

problems were pre-existing and that water quality changes in her well were not due to Cumberland's mining activities.

H. The Acting Regional Director's Decision

On June 28, 2011, the Acting Regional Director responded to George's Informal Review Request. AR 17. He affirmed the PFD's January 31, 2011, determination that Cumberland's underground mining operations did not cause the reported contamination and diminution of George's well water supply and that no further action by OSM is warranted at this time. He stated that based upon his review of the record, including the Moody and Hawkins Reports, his conclusion was "that the water quality and quantity of Ms. George's well began to decrease before the onset of mining activities and worsened over time," and that "[t]here are also no indications in the record that the well water quality and quantity were influenced by Cumberland's mining activities." AR 17 at 9.

The Acting Regional Director stated that "[t]he diminution of the water quality and quantity over time, commencing well before Cumberland's mining operations began, and the lack of any indication that subsidence affected the well[,] indicate that a cause other than mining affected the well." *Id.* at 10. He was persuaded by the finding in the Moody Report that "the contamination of Ms. George's well was the result of a lack of maintenance of the well leading to its contamination by iron bacteria," and thus that Cumberland was not responsible for replacing the water supply under 52 P.S. § 1406.5b(e)(3) and 25 Pa. Code § 89.152(a)(3)(iii)." *Id.*

According to the Acting Regional Director, the fact that Cumberland had provided water to the Black family "was not relevant to determining the cause of the contamination of Ms. George's well." AR 17 at 10. As reasons, he stated that "[t]he record did not indicate the cause of the problems with Ms. Black's well nor the reasoning behind Cumberland's decision to provide the treatment system"; that "the record shows no direct link between the George[s'] and Black[s'] water supplies"; and that "there is no reason to suggest that Cumberland's action to replace the Black[s'] water supply would necessarily imply that replacement of the George[s'] water supply was warranted." *Id.* He also rejected, without explanation, George's argument that the pre-mining water samples collected by Moody after the water was treated cannot be used to rebut the presumption of Cumberland's liability.⁹

⁹ The Acting Regional Director distinguished *Jones v. PADEP and CONSOL* (EHB Docket No. 2007-281-R (Oct. 6, 2009)), a case decided by PADEP's Environmental Hearing Board (EHB) in which the issue of presumptive liability was not involved, but instead whether CONSOL should have taken pre-mining samples of spring water (continued...)

The Acting Regional Director stated that in order to require Cumberland to replace George's water supply, as requested by George, he "would have to find that both Moody's and Hawkins' investigations, which resulted in a finding that mining did not affect the well, were sufficiently flawed in a manner that would lead [him] to believe that Cumberland's mining activities did affect the well." *Id.* He concluded that "[t]he record appears clear that Cumberland successfully rebutted the presumption of liability by virtue of demonstrating that a source, other than mining, led to contamination of the well," and that "[t]he conclusions of Moody and Hawkins were not overcome by any evidence that subsidence had affected the well." *Id.* Accordingly, the Acting Regional Director affirmed PFD's decision that no further action by OSM is warranted.

George's appeal of the Acting Regional Director's Decision followed.

II. DISCUSSION—MATTER REFERRED FOR A HEARING

[1] Where an appellant has raised objections to a Regional Director's decision on informal review, the Board's first task is to determine if there is basis in the record to support OSM's conclusions, and if so, whether the appellant has established that the Regional Director erred in reaching his conclusion. *Robert Gadinski*, 177 IBLA 373, 394 (2009); *John L. Stenger*, 175 IBLA 266, 278 (2008); *Mystic Brooke Development, Inc.* 175 IBLA 209, 219-20 (2008). In cases involving an expert's interpretation of data, the appellant must demonstrate by a preponderance of the evidence that the expert erred when collecting the underlying data, when interpreting that data, or in reaching the conclusion. *Robert Gadinski*, 177 IBLA at 394. A case is properly referred for a hearing if there are material questions of fact that cannot be resolved based upon the record, and if the record does not provide the information necessary for an objective, independent review of the basis for the decision. *The Navajo Nation*, 152 IBLA 227, 234 (2000); *Shell Offshore, Inc.*, 113 IBLA 226, 233, 97 I.D. 73, 77 (1990); *Fred D. Zerfoss*, 81 IBLA 14, 16-17 (1984).

⁹ (...continued)

on the Jones property. The EHB held that CONSOL should have sampled the springs prior to mining, and that CONSOL could not escape liability because there were no pre-mining water quality samples. The Acting Regional Director noted that Moody had taken samples prior to mining, and thus that Cumberland was not attempting "to avoid the obligation to replace a water supply because of a lack of sampling." Acting Regional Director's Decision at 11.

A. *George's Motion for a Hearing*

George filed a motion for the Board to refer this matter to an administrative law judge for a hearing on material questions of fact. *See* 43 C.F.R. § 4.1286(a)(1)–(4). Pursuant to 43 C.F.R. § 4.1286(a)(1), George states that the following issues of fact require a hearing: (1) whether the pre- and post-mining water samples taken by Moody were representative of the true water quality of George's well, and are therefore relevant in proving whether mining caused George's well contamination and diminution; (2) whether Moody could have taken raw water samples that would have been representative of the true water quality of George's well; (3) whether high levels of iron bacteria and decreased water yield in George's well were likely caused by a mining-induced change in the environmental conditions of the underground aquifer; (4) whether George's well was poorly maintained, causing it to gradually deteriorate over a period of years; (5) whether the coincident failure of George's well and Black's well indicates a common cause, such as mining by Cumberland; and (6) whether room-and-pillar development mining can cause subsidence that leads to contamination and diminution of water supplies.

George asserts that under 43 C.F.R. § 4.1286(a)(2), the following evidence concerning the enumerated issues must be presented by oral testimony: (1) first-hand accounts of the history of George's well, its maintenance, and its corresponding water quality and quantity before and after mining; (2) testimony by George's neighbors regarding the contamination and diminution of their own water supplies corresponding with Cumberland's mining activities; and (3) expert testimony regarding the effects of room-and-pillar development mining within the rebuttable presumption zone on water supplies. She argues that "[t]hese categories of evidence are either absent from, or not adequately presented and considered in, the administrative record, rendering them insufficient for resolving the [enumerated] factual issues." Motion for Hearing at unpaginated (unp.) 2. George identifies the witnesses who need to be examined, as per 43 C.F.R. § 4.1286(a)(3), as well as the documentary evidence that, in her view, require explanation.

George asserts that the factual questions she raises "each on its own would alter the disposition of the appeal," and "[t]aken together, these issues would not only alter, but significantly impact the result of the appeal." *Id.* at 3. We agree.

B. *Specific Factual Issues*

Based upon our review of the record, we conclude that there are several material questions of fact that require a hearing. In reviewing PADEP's response to the TDN issued by JAO, PFD concluded that PADEP's "response [was] arbitrary, capricious, or an abuse of discretion under 30 C.F.R. § 842.11(b)(1)(ii)(B)(2)."

AR 5. Despite the pleadings submitted by Cumberland and OSM, and the reports of their experts, many of the weaknesses identified by PFD in reviewing PADEP's response to the TDN remain without adequate explanation.

1. Pre- and Post-Mining Water Samples

We are unable to ascertain the extent to which Moody, Hawkins, and OSM relied upon pre- and post-mining samples of George's well water in determining that Cumberland's mining operation did not cause contamination of her water supply. What is clear is that they rely to some extent upon the samples as evidence that some reason other than mining caused George's well water problems.

In her Informal Review Request, George argued that OSM should "have concluded that the problematic pre- and post-mining samples *do not allow* for a proper comparison of pre- and post-mining water quality and quantity." AR 14 at 5-6 (emphasis added). In her SOR, George argues that the pre-mining samples Moody obtained, after the water was treated, do not provide "a scientifically representative sample of the water supply as it existed before mining commenced." *Id.* at 15. She faults Moody for "collect[ing] its pre-mining samples from appellant's tap after it had settled for some time inside a cistern and then passed through an ultraviolet water treatment system, which kills bacteria." *Id.* at 16. She concludes that "[t]his unreliable analysis therefore falsely portrays the water quality of the well before the mining," and that "[i]t is largely impossible for Moody, Cumberland, or OSM to infer the pre-mining water quality." *Id.*

Hawkins conceded that "the pre-sampling has left a lot to be desired," and that "the pre-mining sampling could have been conducted better." AR 15 at 1. Nonetheless, he insisted that the samples are "not without some merit which allows comparison." *Id.* He acknowledged that there were "shortcomings" involved in analyzing samples of water that had passed through "the external cistern and treatment system." *Id.*

Hawkins was of the opinion that comparing samples of water that had been treated before and after mining causes "some problems with some parameters but not others." *Id.* He stated that "conservative parameters, those that pass through the plumbing system pretty much unaffected, indicate that there has not been a change in water quality due to mining." *Id.* We are puzzled by this statement. He does not identify the "conservative parameters," other than to say that they pass "through the plumbing system pretty much unaffected." *Id.* It would seem obvious that parameters that pass through the plumbing system unaffected would not show a change in water quality. We surmise that parameters that are unchanged before and after mining would be of limited utility in evaluating whether the well water is more

contaminated after mining than before. Nevertheless, those unidentified unchanged parameters are the ones that Hawkins relies upon to conclude that mining did not cause or contribute to George's well problems. We think it fair to ask whether there were parameters that did change with treatment that are suggestive of degradation of George's water supply, and, if so, whether mining could have been the cause. We are mindful that Hawkins and OSM assert that causes other than mining were responsible for the contamination and diminution. However, we fail to see how OSM can rely upon "pretty much unaffected" water parameters, whatever they are, to support its conclusion that mining did not cause or contribute to the contamination and diminution of George's well water.

More specifically, one point of agreement among the parties appears to be that iron concentrations in the water caused the proliferation of bacteria colonies in George's well and cistern system. If Hawkins considered iron concentration in the water samples before and after mining as a parameter, conservative or otherwise, we have his own word that the pre- and post-mining methods used for sampling could not "provide *unbiased results* in terms of the iron concentration." AR 12 at 7 (emphasis added).

In her SOR, George asserts that the "illegitimate sampling data could not have provided sufficient evidence that mining was not the cause." SOR at 14; see PADEP's Technical Guidance Doc. No. 563-2112-605, *Water Supply Replacement and Permitting*, at 3. We agree that an analysis of pre-mining samples of treated water, regardless of how the parameters are defined, is of limited utility as evidence that Cumberland's underground mining activity did not cause or contribute to the degradation of George's water supply. Notwithstanding the reasons advanced by Moody for not having taken raw water samples from George's well, the fact is that we are now left to evaluate the relative merits of those samples as evidence of the pre-mining quality of George's well water. The reasons for avoiding this predicament should be obvious and no doubt led PADEP, in issuing technical guidance for taking what George calls "scientifically defensible water sampling" (SOR at 14), to include the following provision: "Water samples obtained from a private supply should document the raw, natural quality of the source. Treatment systems on a private water supply should be bypassed when documenting raw water quality. In addition, proposed replacement sources must include analyses for bacteria." Technical Guidance Doc. No. 563-2112-605, *Water Supply Replacement and Permitting*, at 3.

We have reviewed the Answers submitted by OSM and Cumberland, and we find no satisfactory response to the flawed methodology used by Moody in taking pre-mining samples of George's water, or to the compromised nature of those samples as evidence in determining whether Cumberland's underground mining operation caused George's well water to become contaminated. OSM and Hawkins argue that

iron bacteria would have been present in George's well water before Cumberland's mining activity, and that the evidence points to "high amounts of bacteria colonies growing on and coating the sides of the bore and floating in the water column, which indicates the conditions in the well have permitted the growth of these bacteria for an extended period of time." AR 12 at 13. However, we are unconvinced that mining could not have been the cause, as argued by Cumberland and OSM.

We conclude that there is a factual question as to whether the proliferation of iron bacteria in George's well and cistern was caused by Cumberland's mining operation. In addition, we are uncertain as to what Cumberland and OSM mean when they say that the bacteria colonies in George's well system had been growing "for an extended period of time." We wonder whether the period of time from commencement of Cumberland's mining activity to George's reported water problems would constitute the requisite "extended period of time." The record makes clear that because the pre-mining samples taken by Moody would have passed through George's treatment and filtration system, we cannot know from those samples what level of iron bacteria was present before mining. We have only the word of OSM and Cumberland that because mining was not the cause, the samples would not have shown an increase in iron bacteria in terms of pre- and post-mining analysis had the samples been of raw water. This is an assumption that we are unwilling to accept. We are left with the question of whether the growth of iron bacteria colonies in George's well occurred prior to mining, or whether Cumberland's mining operation caused or contributed to their proliferation.

2. *The Subsidence Issue*

George relies upon PADEP's *Act 54 Amendments Five-Year Report, 2003–2008: The Effects of Subsidence Resulting from Underground Bituminous Coal Mining on Surface Structures and Features and on Water Resources* (the Act 54 Report)¹⁰ in arguing that Cumberland's mining method may have been responsible for the contamination of her well water. The Act 54 Report describes the room-and-pillar mining method, which involves a grid-like pattern of open areas with large support columns, and the longwall mining method, which involves cutting long, rectangular swaths of the earth to extract panels of coal that can exceed 1,000'. She states that "[a]ll longwall mines necessarily use room-and-pillar mining to allow machinery to gain access underground and permit the transport of coal," and that the Cumberland mine was one of 8 longwall mines, out of 50 mines that use the room-and-pillar method. *Id.* at 19. She notes that Hawkins correctly found that Cumberland's

¹⁰ This document is available at http://www.dep.state.pa.us/dep/deputate/minres/bmr/act54_2008_report/toc_01_.pdf.htm (last visited Mar. 16, 2012).

underground mine was within the rebuttable presumption zone, but that his assertion that room-and-pillar mining is not commonly associated with subsidence “ignores the geological impacts of development mining on water aquifers throughout Southwestern Pennsylvania as portrayed in the Act 54 Report.” *Id.* at 20; *see* Hawkins Report at 9-10.

Cumberland asserts that it “does not engage in room and pillar retreat mining,” but “operates a longwall mine, and uses ‘room and pillar,’ development mining to develop permanent entries to access areas of the mine where full extraction will occur.” Cumberland Answer at 18. According to Cumberland, it “conducts only development mining, which although technically a form of room and pillar mining, is a form of mining which removes only around 50% of the coal in an area.” *Id.* We are not convinced that Cumberland’s effort at distinguishing its mining methods from that described by George, relying upon the Act 54 Report, is successful. According to Cumberland, the Act 54 Report states that “room and pillar mining without retreat mining (like the mining done by Cumberland near Appellant’s property) does not ‘generally’ result in subsidence.” *Id.* However, even if it is true that the type of mining done by Cumberland near George’s well does not “generally” result in subsidence, we are still left with the factual question whether, in this case, Cumberland’s longwall mine in fact caused or contributed to her well contamination.

George relies upon the Act 54 Report in discussing the phenomenon of “secondary permeability” of the geologic strata common to western Pennsylvania. “Secondary permeability ‘refers to groundwater movement through geologic features such as fractures, bedding plane separations, joints, and cleats associated with the strata.’” SOR at 20 (quoting Act 54 Report at VI_8). She states that secondary permeability could have caused or contributed to her water problems, and quotes the following from the Act 54 Report: “Western Pennsylvania hydrogeology is largely influenced by secondary permeability. Enlargement of fractures and bedding planes by subsidence will increase the secondary permeability of the strata.” *Id.* She argues that “[t]his geological make-up suggests that room-and-pillar mining in fact causes subsidence by creating voids within the strata of the earth, which then alters the movement of water in underground aquifers.” SOR at 21.

George disputes OSM’s having “frame[d] room-and pillar mining as a relatively innocuous process not typically associated with water supply issues.” *Id.* She emphasizes that in the Act 54 Report, PADEP documented 238 instances of reported effects on water supplies from room-and-pillar mining, and found that mining companies were responsible for room-and-pillar-related water supply contamination in 40% of the 238 reported cases. *Id.* at VI_3. She argues that the

Act 54 Report makes clear that there is potential for water supply problems to be associated with room-and-pillar mining:

Although subsidence is generally not an issue with room-and pillar mining, by creating a void in the earth within or below an aquifer *there is a chance that the groundwater flow path can become altered, impacting overlying water supplies. . . .* Alteration of the groundwater flow path can cause diminution in the form of an insufficient quantity or total loss because of a drop in the groundwater levels. Contamination can also be an issue with altered flow paths as groundwater from contaminated sources such as mine pools or surface water is drawn into the recharge area or as fluctuating water levels cause oxidation of acid producing minerals in the overburden.

Act 54 Report at VI. George states that “[i]t is apparent that room-and-pillar mining activity affects water supplies, and often causes contamination and diminution of water supplies,” and that “[t]he fact that room-and-pillar mining, rather than longwall mining, exists within the rebuttable presumption zone should not have led OSM to determine that a cause other than mining must have been the source of contamination of Ms. George’s water well.” SOR at 21-22.

OSM and Cumberland argue that George inappropriately relied upon the Act 54 Report since it is not a part of the administrative record. We reject this criticism. OSM states that it did not consider the Act 54 Report, but “instead . . . looked at the actual impacts that Cumberland’s mining might have had on the Petitioner’s well, and found there were no such impacts.” OSM Answer at 23. OSM argues that the Act 54 Report “summarizes the types of impacts the room-and-pillar mining, through subsidence, *could* have on water supplies,” but that such “analysis is inapposite to the instant case, . . . because OSM found that *no subsidence occurred* that could have affected the Petitioner’s well.” *Id.*

When recording the down-hole video, Moody observed that “[t]he casing extended to approximately 25 ft bgs, and a void was observed immediately around the bases of the casing.” AR 14b at 4. Moody recorded “bedding plane fractures . . . at approximately 59, 61, 64, 78, and 90 ft bgs.” *Id.* At the “59-ft depth fracture, . . . the orange staining extended downward within the well bore to the depth of the pump intake, which was at approximately 91 ft bgs.” *Id.* Moody stated that there “[t]he pump was observed to be approximately 91 ft BTOC which is where one of the apparent bedding plane fractures in the well is located,” and that “[h]igh concentrations of the aforementioned algae-like suspect iron bacteria material were present on top of the pump.” *Id.* Thus, the down-hole video showed several bedding

plane fractures, with iron bacteria concentrated at the top of the pump where a fracture is located.

Moody also expressed the understanding that mining subsidence could “contribute to iron bacteria contamination of a well, in cases where subsidence has caused the well casing to become damaged.” AR 14b at 6. Moody acknowledged that “mining subsidence can increase the aquifer’s permeability through fracturing,” and that “the increased permeability of the aquifer” could “facilitate dispersion of iron-bacteria that was already present within surface water bodies, other portions of the aquifer, and/or within other wells.” *Id.* Moody concluded, however, that mining subsidence could not have degraded George’s well water supply.

We have noted that Hawkins also observed “expected stress-relief fractures . . . intersected by the well bore,” but found “no indication that these fractures were newly formed, induced by mine subsidence or that existing fractures were accentuated by subsidence.” Hawkins Report at 11. Hawkins simply states that there is no evidence that the fractures are mine related.

PFD addressed this issue in determining that PADEP’s response to the TDN was arbitrary, capricious, or an abuse of discretion. PFD stated that distance of mining from the well was not determinative of whether subsidence could have caused the water damage. PFD stated that “fluctuations in the ground water level in a well due to fracturing of the water bearing geologic formations can cause or increase the propagation of iron oxidizing bacteria,” and that “[s]igns of subsidence do not have to be visible in the well bore.” AR 5 at 3. PFD indicated that “[g]round water data . . . could have documented any fluctuations in the water level as the mine approached.” *Id.*

Other than the word of Moody and Hawkins that the fractures they identified are not mine related, there is no discussion about how they developed. It could be that they are naturally occurring fractures, *i.e.*, not caused by Cumberland’s underground mine, given the area geology. However, we wonder if perhaps any of the fractures could have been created or were increased by subsidence, which could have damaged the well casing. In light of the arguments advanced in George’s Informal Review Request, we conclude that questions regarding whether there is mine-related subsidence and whether it could have caused or contributed to the degradation of George’s well water are properly addressed at a hearing.

3. Water Contamination of Other Wells in the Area

George’s argument that water contamination is pervasive in the immediate area where she resides is to the point and bears quoting:

The contamination of appellant's well is not an isolated case within the area, but part of a pattern of water well contamination that is pervasive throughout the village of Kirby. There are a number of wells within a small area that have all experienced contamination around the same time as appellant. The Greenwood property immediately to the west experienced well contamination, as did the Black property immediately to the east. Post-mining samples of the Blacks['] water well indicate excessively high contamination of iron. Additionally, the Higgins property, located approximately 100 feet to the east of appellant's property, suffered similar contamination. All of these problems arose from the fall of 2009 to the spring of 2010. As of this appeal, Cumberland currently supplies weekly water shipments to the Greenwood, Black, and Higgins properties.

SOR at 23. She asserts that her "particular problem is clearly part of a larger pattern of contamination within the Kirby community for which Cumberland has assumed partial responsibility." *Id.* (citing OSM Response at 10). She argues that this "parallel emergence of water supply contamination in such a small area suggests a common agent." *Id.* She maintains that OSM mistakenly concludes that there is no link between the water contamination of the George and Black wells; rather, she asserts that "it is extremely unlikely that multiple wells within a small geographic area will experience near simultaneous failures absent a common source (e.g., development of a mine or quarry)." *Id.* at 24.

In its Answer, Cumberland states that the short answer to George's contention that Hawkins should have investigated "every other complaint related to Cumberland's mining in the vicinity of Appellant's property" is that "Mr. Hawkins was not required, nor was he obligated, to do so, although in this instance he, in fact, did consider other 'complaints.'" Cumberland Answer at 20. OSM argues that "the AR Director properly observed that the Record lacked any indication of the cause of the contamination of the Blacks' well, or of a direct link between the Georges' and Blacks' water supplies." OSM Answer at 24; Acting Regional Director's Decision at 10. OSM also states that "[a]lso absent from the Record is any indication of why Cumberland elected to provide replacement water supplies for other homes in the area." *Id.*

It is precisely because the record offers no clue as to why the Blacks' well water was contaminated, despite its proximity to the George well, which was also contaminated, or as to why Cumberland elected to provide replacement water to other homes in the area but not to George, that this case is appropriate for a hearing. Hawkins' assertion that he considered the Blacks' problems during his investigation, even without talking to the Blacks, and "definitely factored [them] into [his] overall

decision” (AR 15 at 1), does not answer the questions presented by the facts of this case. There may be truth to the claim that Cumberland’s having elected on its own to replace the Blacks’ water supply system, as well as the water supplies of Greenwood and Higgins, “does not mean an admission of guilt that they degraded the original system.” *Id.* Hawkins may also be correct that “[o]ften an operator will do this as a good neighbor gesture.” *Id.* However, we are left wondering why Cumberland’s good-neighbor gesture for the Black, Greenwood, and Higgins families was withheld in the George case. It may be that contamination of the other wells in the vicinity of George’s well was coincidental, and that Cumberland is being a good neighbor by providing water to them. However, we think whether there is a connection between George’s water problems and the problems experienced by neighbors in close proximity is a relevant question. We would deem relevant any evidence suggesting that the water supplies of the other families suffered the same type of contamination as the George well, during the time period when Cumberland was mining in the vicinity, as well as Cumberland’s reasons for electing to replace their water supply systems but not that of the George family.

4. *Water Use by the Trucking Business*

George further disputes Hawkins’ suggestion that H.K. Enterprises, which conducts business more than 1,500’ away from George’s property, could be responsible for the contamination of George’s well water, through extracting large amounts of water from the underground aquifer. SOR at 24; *see* AR 12 at 15. In his reply to George’s Informal Review Request, Hawkins calculates the number of gallons per minute it would take to wash a single truck and states that such use would deplete the aquifer from which George obtains her water. AR 15 at 2. We see merit in George’s assertion that “[i]t is a glaring contradiction to contend that H.K. Enterprises and appellant share a hydrologic connection, at 1,500 feet to the west, but not appellant and the Blacks 100 feet to the east.” SOR at 24. She adds that H.K. Enterprises has been operating for over a decade without causing water contamination or deterioration issues, and 8 years prior to the start of Cumberland’s mining activity.

The record provides no basis for determining whether OSM is correct that business use of water from the Kirby school well could have depleted the aquifer, thereby diminishing George’s water supply. This factual question was raised by Hawkins himself in his “attempt to determine what may have caused the problem.” Hawkins Reply at 2. To the extent OSM relies upon H.K. Enterprises’ use of water in arguing that some factor other than mining caused George’s well water problems, we deem it appropriate for this issue to be resolved after the presentation of evidence at a hearing.

5. *The Maintenance of George's Well*

Finally, George disputes OSM's conclusion that her water quality problems are attributable to the failure to maintain her water well. To the contrary, she states that she "has diligently maintained her well for years, taking numerous proactive steps to preserve and maintain the quality of her water," and that "[s]he enjoyed clean and safe water of a high quality for more than 50 years and did not encounter any significant problems with water contamination or diminution until the fall of 2009." SOR at 25. She further disputes Hawkins' assertion that the quality of her water "has been slowly deteriorating long before the fall of 2009." AR 12 at 14. Rather, she claims that what she "experienced was a rapid and pronounced deterioration in water quality over a few short months." SOR at 25. She states that she previously changed her water filter once every few months prior to March 2010, but that "it soon became necessary to change it every other day." *Id.* She asserts that her "treatment system was still functioning properly," but that "it was simply overwhelmed by the amount of iron bacteria it needed to treat." *Id.* We see no reason to question her position that the steps she took "to deepen the well in 1975, to install the Coyote pump in 1988, and to add a filtration system in 2002, all demonstrate the proactive steps of a diligent owner, not a 'lack of maintenance of the well.'" *Id.* at 26 (quoting OSM Answer at 10). Issues regarding the length of time George's well water had been deteriorating and the steps she took to maintain her well are appropriately resolved at a hearing.

III. CONCLUSION

On the one hand, we have George's assertion that her water quality and quantity deteriorated during the period when Cumberland conducted its underground mining activities in the immediate vicinity of her well, and that those activities caused or contributed to the contamination of her well water. On the other hand, we have the Acting Regional Director's determination that "the contamination of Ms. George's well was the result of a lack of maintenance of the well leading to its contamination by iron bacteria." AR 17 at 10. George claims that she was diligent in maintaining her well. Based upon the record, we are unable to decide whether the facts support George or OSM.

Accordingly, we refer this case for a hearing on the question of whether Cumberland's mining operation caused or contributed to George's well water problems. The hearing will address the issues raised by the appellant, as identified in this opinion, and any other relevant issues identified after referral of the case for a hearing. The decision of the administrative law judge shall be final for the Department in the absence of an appeal to this Board.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 C.F.R. § 4.1, is referred for a hearing.

_____/s/_____
James F. Roberts
Administrative Judge

I concur:

_____/s/_____
Christina S. Kalavritinos
Administrative Judge