

**New York State Department of Environmental Conservation**

**Division of Mineral Resources**

**Bureau of Oil & Gas Regulation, 3<sup>rd</sup> Floor**

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Alexander B. Grannis  
Commissioner

July 6, 2009

Mr. William Boria  
Chautauqua County Dept. of Health  
Hall R. Clothier Bldg.  
7 North Erie Street  
Mayville, NY 14757

Dear Mr. Boria:

I am responding to your letter of June 1, 2009 to Christopher Miller, our Region 9 Minerals Manager, concerning a water well complaint from Mr. Ferrugia of 2641 Donelson Road in Jamestown. Mineral Resources staff has investigated the complaint and have obtained additional information that was not included in Chautauqua County Department of Health's (CCDOH) analysis of the complaint. I believe it will be helpful to review the sequence of events, water test analyses, well inspections performed by regional Mineral Resources staff and my interviews with the Ferrugias and their neighbors

**Sequence of events**

The Ferrugia's contracted Caster Water Well Drilling (Caster) to drill their water well in 2001. The well was drilled through 7 feet of soil and till into shale and stayed in shale to a total depth of 85 feet. The driller noted flows of water in the well at 25 and 30 feet. Based on topographic information, the surface of the Ferrugia's leach field (approximately 273 feet away from the water well) is approximately 15 feet lower than the surface elevation of the water well. However, the noted water zones are stratigraphically 10 to 15 feet lower than the leach field. See attached elevation diagram (Attachment 1).

Caster hydraulically fractured Ferrugia's water well to increase the flow of water from the shale (2 gpm pre-frack to 15 gpm post-frack). Caster informed DEC regional Mineral Resources staff in June 2009 that the frack performed on the water well could extend as far as 200 feet from the well. Perhaps this explains the presence of coliform and the note in the 2005 report that the well was bacterially unsafe as sampled in the 2005 test. The rock units in this part of the state dip to the south in the Kiatone area and could create a pathway for the flow of fluids within the shale from north to south. Any leach field fluids entering the shale may very well flow south toward the Ferrugia's water well.

### **Adjacent landowner water well tests done by Nornew in 2005**

Nornew tested the Ferrugia, Nordlund, Boardman, Pelham, Johnson and Legere water wells prior to drilling the Eckman 7 well in order to have baseline water quality data of the private water wells in the immediate vicinity of their proposed gas well (see Attachment 2). The Nordlund, Boardman and Ferrugia wells all tested as "bacterially unsafe" according to the Microbac Lab's report. Total dissolved solids (tds) were found, prior to the drilling of the Eckman well, to be in the 250 ppm (Ferrugia) to 881 ppm (Pelham) range. The tests also discovered that sodium values were in the 76 ppm to 301 ppm range and chloride values were in the 3.8 ppm to 251 ppm range. It is clear from the 2005 tests that although the most recent water well installed (Ferrugia) was on the low end of the range, other nearby water wells completed in the same shale unit had significantly higher tds, chloride and sodium levels present in the well water before Nornew drilled the Eckman 7 well. Nornew tested the Ferrugia's water again on April 16, 2007. The results of these tests were included your June 1, 2009 letter.

Nornew drilled the adjacent gas wells and sealed off all the shallow zones by cementing the casing from the surface casing seat to the ground level. According to Division of Mineral Resources records, the closest gas well to Ferrugia's property, Eckman 7- 468 (hole number 24099), commenced drilling on August 8, 2005, finished drilling on August 14, 2005 and was completed as a productive well on September 1, 2005. Mineral Resources inspectors found the fluids from the well were contained in a lined pit and no violations occurred at the site. Nornew cemented the surface casing from 487 feet to the surface. The site was subsequently reclaimed without incident or complaint. Nornew submitted cement tickets to the Department for the surface casing cement job and these tickets document good cement returns to the surface which shows that the casing was cemented properly.

According to CCDOH, the Ferrugias began noticing a change in their drinking water in mid to late 2007, some two years after the Eckman 7 gas well was drilled. Regional DEC records show that Mrs. Ferrugia contacted Mineral Resources with her complaint on December 14, 2007. Mineral Resources staff, following the MOU with CCDOH, informed Mrs. Ferrugia that she needed to contact CCDOH and also told her that CCDOH would refer the complaint to Mineral Resources after ruling out other causes of contamination. It is important to note that regional Mineral Resources staff had not received any referral from CCDOH on this well until Chris Miller received your June 1, 2009 letter.

Your June 1 referral package included information that Caster faxed Ferrugia's water well drilling information to CCDOH on February 12, 2008. Mineral Resources staff inspected the natural gas wells adjacent to the Ferrugia property in June of 2008 due to a transfer of ownership request. Staff found that the Eckman 7 drilling pit had been reclaimed, the site restored to grade and noted that the 4,000 gallon brine tank was approximately 20% full. Production brine is typically flowed from the well through a gas/water separator and contained in a water-tight brine tank until the operator calls for a brine hauler to take the brine to a treatment facility. Our inspector found no evidence of gas leaks, brine discharge or pollution at the Eckman 7 or any of the other wellsites in 2008.

Your June 1 letter stated that you had investigated the Ferrugia's water well complaint on April 20, 2009. After receiving the CCDOH referral, Mineral Resources performed a records search of the natural gas wells in question and inspected the gas wells in proximity to the Ferrugia property. Staff

