Mapping of Environmental Effects of Hydraulic Fracking using Satellite Imagery

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ABSTRACT

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Hydrofracking is a drilling technique that has been around since the late 1940s. Since the 1990s, a widespread technique has been developed known as horizontal drilling. The process starts by drilling a well vertically or at an angle into the ground about 1-2 miles. The well is then encased with steel or cement, to “ensure” nothing leaks into the groundwater. Once the layer of rock has been reached, drillers begin drilling horizontally up to around one mile. Fracking fluid is pumped into the well at very high pressures (up to 9,000 psi), which creates fissures/cracks in the rock. Oil and/or gas is then allowed to flow from the surrounding rock, and is pumped back to the surface. Sand and ceramic particles are used to prop open the pore spaces and fissures, for oil and gas to continue to flow freely without pumping pressure. Because of the potential health hazards to the environment and people, hydrofracking has become a controversial subject. Cases of water pollution from fracking fluid and land degradation have occurred in the Midwest and bordering New England, where hydrofracking has increased exponentially in the last couple decades. For this study, land and water toxicity reports as well as satellite and airborne images of before and after hydrofracking came into the area were used to map the damage to the environment in a study area in Pennsylvania. This raises alarms as more and more people and land in the last couple decades have been negatively affected. People are becoming aware of the potential dangers of hydrofracking in their area.

Key Words: Hydrofracking, Environment, Satellite Imagery